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COMMONWEALTH OF PENNSYLVANIA.

1901.

OFFICIAL DOCUMENTS,

COMPRISING THE

DEPARTMENT AND OTHER REPORTS,

MADE TO THE

Governor, Senate and House of Representatives of Pennsylvania.

VOL. VI.

WM. STANLEY RAY,
STATE PRINTER OF PENNSYLVANIA.
1903.

VIRTUE
LIBERTY AND
INDEPENDENCE

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Annual Report of the Secretary of Internal Affairs.—Statistics.

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Supplement to the 28th Annual Report of the Bureau of Industrial Statistics.

ANNUAL REPORT

OF THE

SECRETARY OF INTERNAL AFFAIRS

OF THE

COMMONWEALTH OF PENNSYLVANIA.

PART III.

INDUSTRIAL STATISTICS.

VOLUME XXIX.

1901.

WM. STANLEY RAY,
STATE PRINTER OF PENNSYLVANIA.
1902.

VIRTUE
LIBERTY AND
INDEPENDENCE

REPORT

OF THE

Bureau of Industrial Statistics.

COMMUNICATION.

Department of Internal Affairs,
Harrisburg, Pa., June 30, 1902.

To His Excellency, William A. Stone, Governor of the Commonwealth of Pennsylvania:

Sir: In compliance with the requirements of the Constitution, I have the honor to submit herewith, for transmission to the General Assembly, the twenty-ninth annual report of the Bureau of Industrial Statistics, the same being Part III of the reports of this Department .

I am, very respectfully,
Your obedient servant,
JAMES W. LATTA,
Secretary of Internal Affairs.

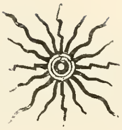
LETTER OF TRANSMITTAL.

Harrisburg, Pa., June 30, 1902.

Hon. James W. Latta, Secretary of Internal Affairs of the Commonwealth of Pennsylvania:

Sir: I have the honor to present herewith the twenty-ninth annual report of the Bureau of Industrial Statistics. The report covers the manufacture of boots and shoes and cement, with illustrations; the tanning industry and the manufacture of pig iron, steel, rolled iron and steel and tin plate. It completes the 1892 comparative series, and continues the interesting 1896 comparative series.

Very respectfully,
JAMES M. CLARK,
Chief of Bureau.



INTRODUCTION.

Interest is added this year by the presentation of the manufacture of boots and shoes in the State, and the accompanying article on their manufacture. Footwear is treated exhaustively from the cobbler of oriental times up to the present day, and to our own country, with our mammoth factories, from which salesmen are sent into the remotest parts of the world. It is the first presentation as a census work the Bureau has given of the manufacture of boots and shoes in Pennsylvania, and the volume of business done will be a surprise, even to the most observing, and that Pennsylvania still continues to lead in producing the material out of which these boots and shoes are made is fully exemplified by the census of the tanning industry which this report contains.

Another feature of the report of absorbing interest is the manufacture of Portland cement. Pennsylvania produces the coal and iron and steel of the world, and it will not be surprising if she should, at no very remote date, lead all of the world in the production of Portland cement. The growth of this industry in the United States since 1890 has been remarkable, and in this, as in many other industries, the United States is but a synonym for Pennsylvania.

The departure contemplated last year of not confining the rolling mill production to iron and steel rolled into finished form, but of including the billet, muck bar or any of the many less finished forms of production, has in this report been carried out with satisfactory results. The departure not only has its benefits, but its difficulties. As a census work, the presentation is of materially increased value, but, as with all more comprehensive presentations, the difficulty has been to avoid twice counting of value. The facts as presented are true as to the people employed and the wages, and they are true so far as affecting the output of the respective plants or establishments, and while the value as given is the true value of the production as it left the plant, yet to entirely avoid the twice counting of values, there must be an actual separation of the billets, slabs, blooms, muck bar, etc., sold to Pennsylvania manufacturers from that sold to manufacturers outside of the State. While every effort has been made to get such actual separation, we have found it necessary in a number of instances to use approximated figures.

It will be observed that 1901 shows a largely increased production of black plate for tinning, and of tin and terne plate, with steady values and increased wages.

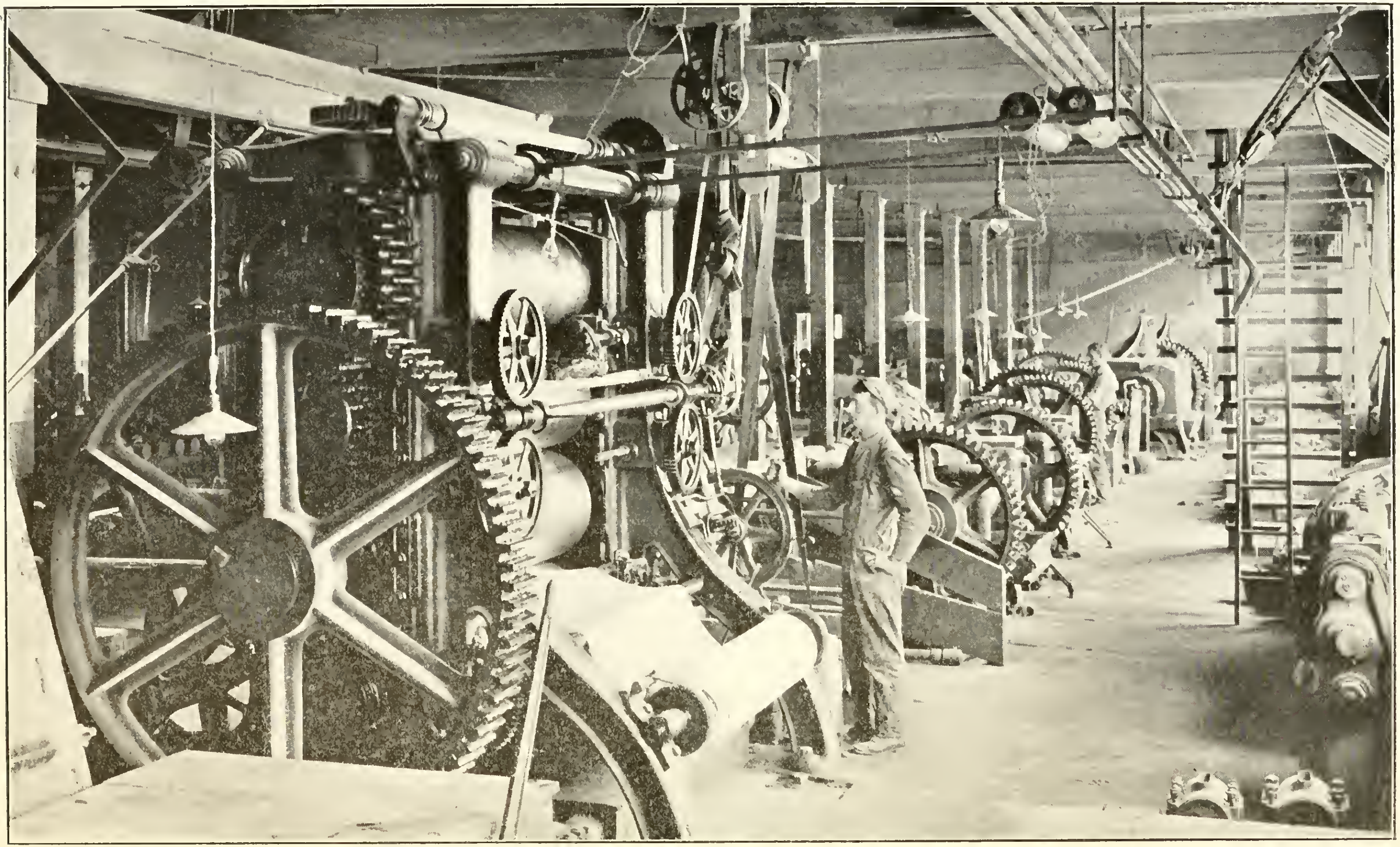
As all our comparative work contemplates a series of ten years, with this report the 1892 Comparative Series, that is the series established in 1892, ends its mission.

Some idea of the volume of business embodied in these annual publications may be had from the statement that in round numbers the industries herewith presented, after making necessary elmniations from the comparative series tables to avoid twice counting, represent 321,000 workmen, 160 millions of wages and 800 millions of value.

As the year has been one of much talk about strike prevention, conciliation, etc., and the best efforts of the strongest minds of the nation have been brought to bear upon this absorbing question, attention is called to the replies from manufacturers to the following letter, which accompanied the blanks for 1901 sent out in December, 1900:

"The labor question is so agitating the public mind, and so much thought is being given to the question of conciliation, that every successful plan of strike prevention, whether individual or organized, should, for the common good, be made available to the general public. To that end, if you have put into practice any plan that has proved successful in bringing about a better understanding, in adjusting grievances, or in preventing, or settling strikes, and will kindly tell us what that plan is, and what successes have attended it, you will confer on us a great favor, and, we believe, on the public a great good."

It occurred to us that the injection of such matter at this time would but add to the growing interest which is being taken in the work of this Bureau, and in connection with this thought it might not be out of place to say that the Paris Exposition of 1900 awarded the Bureau a gold medal for the efficiency of its publications.



Calender Room, Showing the Running of Rubber on Cloth.

SHOES.*

PRIMITIVE FOOTWEAR.

Every civilized man, woman and child wears shoes of some description, and a part even of the savage peoples encase their feet in some sort of covering. Few, however, pause to think how shoes are made, where the leather they are made of is obtained, or how are produced the vast quantities of miscellaneous "findings" which contribute to the make-up of a complete shoe. Comparatively few people understand the various processes through which the raw material goes before being placed on the market as a finished product.

Ever since the making of shoes became a recognized craft, the shoemaker has played a conspicuous part in romance and fiction, and has been an interesting personage to authors of song and story. By some of them he has been lauded and honored; by others, derided and made the subject of merriment and ridicule. As an important character he has appeared in stage plays, poems and novels innumerable. As an embodiment of wisdom he has been idealized by the Chroniclers of the East, and as a hero the shoemaker has had the halo of romance thrown around him by more than one wielder of the pen. The gray-haired, horny-handed cobbler seated on a bench in his stall, with lap-stone and hammer, pounding out a precarious living, has been the subject of many a narrative. The Oriental story-tellers were fond of him. He appears in "Arabian Nights," among the thousand and one romances, and he is found in Indian and Persian legends. Wherever he appears in the romances of the Oriental story-teller, the shoemaker is a fellow of infinite jest and droll good humor, preternaturally wise, merry and resourceful. Horace, the renowned poet, did not disdain the cobbler. The Horatian shoemaker is a man of wisdom, a person of light and leading. That famous little romance, a favorite of Oriental scholars, which tells the story of "Ahmed, the Cobbler of Ispahan," is full of human nature and as true in its portraiture to-day as it was three thousand years ago. In one of the Greek dramas allusion is made to the daily earnings of the shoemaker, and it is known from historical record, that the streets of Rome were encumbered with shoemaker's stalls in the reign of Domitian. But as the Factory System has gradually increased and come into general use, supplanting the old-time cobbler, much of the romantic element associated with the calling has passed away and with it many of the characteristic legends and peculiar practices of shop tradition. Still there are few common-place articles of every-day use so replete with romantic and interesting observation as shoes.

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* For the Production in Pennsylvania for 1901, see the closing pages of this report.

The oldest or rudimentary forms of covering for the feet were sandals, a flat sole to be worn under the foot and fastened to the wearer in various ways by thongs passing between the toes, around the heel and over the top of the foot. Many and varied have been the additions to this simple footwear.

Because of its ancient origin, its peculiar and slow development through the various stages in the course of evolution by which it has arrived at its present complete and artistic perfection, the story of the shoe is interesting to the maker, the seller and the wearer of this indispensable article. Although it is probable that foot coverings of the most primitive sort were adopted as protection, it is nevertheless apparent that the first advances in footwear were also for the purpose of decorating the feet, rather than for utility alone. Even to-day, in some foreign lands, shoes are valued more for their ornamentation than for their serviceable qualities. This is evident in India and other Oriental countries where elaborately embroidered shoes are prized for their gaudy appearance rather than for durability. North American and Canadian Indians fantastically decorate their moccasins with bead work.

Research establishes the fact that ornamentation preceded utility. Some three thousand years ago, in Egypt, protection to the feet was entirely unknown. The pedal extremities were stained or painted. Orange color seems to have been the favorite hue, as it is frequently observed on the lower extremities of mummies, denoting its use in ancient Egypt. The same practice was followed by Hindoo women of the lower class and is observed in some quarters of the globe to-day.

Sometimes enormous anklets made of metal or bone, strings of wild animals or shark's teeth, or heavy metal rings on the toes are added to the decorations of the lower limbs by some of the wild tribes of the earth. While the women were staining their feet with orange color and adorning their toes and ankles with metal rings, it remained for a man to invent the first shoe. This was an incipient sandal, consisting of a mere strap, which passed under the heel and was secured over the instep. This is supposed to have been the earliest style of footwear. From this crude beginning has been gradually evolved by the ingenuity and skill of shoemakers during the centuries, an article indispensable to man, in use almost the world over. Commercially, the shoe industry, which gives employment to thousands and puts into circulation untold volumes of money, is in importance probably second to none. Without shoes comparatively little glazed kid or sole leather would be used and a vast quantity of lesser materials manufactured especially for use in making shoes would be valueless.

It must not be supposed that the style of footwear passed directly from the open sandal to the closed shoe. The change was very gradual, and required decades to accomplish. Link by link has the chain of change and variation been forged, until down through the centuries, from the simple covering in vogue with the antideluvians, the beautiful artistic article of the twentieth century, with its elegant lines and graceful curves has been evolved.

Specimens from ancient Egyptian tombs indicate that sandals were made of plaited palm leaves, of papyrus stalks interwoven like a mat, or of leather. Latchets were sometimes passed through thongs at the sides of the soles, in order to provide fastenings. Sandals were sometimes pointed and turned up at the toes; those for the priests, we read, "were of strips of palm leaves nicely fitted together and furnished with bands made of the stems of the papyrus plants." Ancient Hebrews used similar protection for the feet, often having a sole of linen cloth, felt, leather or wood, and sometimes protected with metal. Those worn by the soldiers were of brass and iron. Knights of a later period wore covering of steel or brass, in conjunction with their armor or coats of mail.

In ancient times there was attached a symbolism to nearly everything and not least among them was footgear. What would appear ridiculous to our modern civilization and customs, was held sacred in centuries gone by. To take the shoes from a captive was equivalent to a sentence of imprisonment; the restoration of the shoe indicated liberty. So, in the parable of the Prodigal Son, putting shoes on his feet denotes the father's reception of the penitent as a free man and as a son. To cast one's shoe over certain lands was to claim their possession.

Among the Romans the shoe was symbolical of rank or station. No one below a certain position could wear red shoes, and only Senators could have four latchets. This number made the shoe reach to the middle of the leg. It was then of light material, adorned with gold and silver crescents and precious stones. These splendid shoes were doubtless known to the ancient Britons while the Roman ruled them, but the Saxons retained their own rude "bootees" of raw hide, slit across the instep for greater ease and freedom. As time passed and they became more refined, they dressed and tanned the skins, and dyed them brilliant colors; or, oftentimes they gilded them. Shoes taken from the tomb of Bervard, grandson of Charlemagne, are made of red leather, with wooden soles and made rights and lefts.

In Egypt and Syria, taking off one's slipper and striking another with it or throwing it at him is still a customary token of renunciation, as an unworthy son and, perhaps, playfully, of a daughter leaving her parents at her marriage, from which comes the curious old custom of throwing old shoes for good luck after a bride and bridegroom departing for their new home. It is learned from several passages in the New Testament that the untying of sandals, as involving considerable trouble, was assigned to servants; the loosening of thongs or latchets, therefore, became a symbol of servitude.

Sandals of Hebrew women were made of skins of badgers and of other animals, and were frequently elaborately ornamented, probably with thongs embroidered with silk, silver and gold. Sandals were not usually worn in the house, but were put on for outdoor business or a journey, or for military expeditions.

Mohammedans now remove their shoes on entering a mosque, and Samaritans on approaching the site of their temple, do likewise. To bind on the sandals, to loose them, to carry them until needed were the duties of a servant or slave. The poor Hebrews often went bare-foot from necessity, but among the middle and upper classes this was a sign of mourning. Sandals were put off in token of reverence and of moral defilement, hence, the priests ministered bare-foot in the temple.

Assyrians wore a sort of half-slipper, encasing the heel and sides of the foot, but leaving the toes bare. It was made of wood or leather. Modern Turks, Assyrians and Egyptians now wear a light shoe resembling our slipper and sometimes a wooden shoe with a high heel. The Bedouins wear only sandals.

Among the ancient Greeks and Romans the use of shoes was not general. The youths of Sparta were trained to go bare-foot in order to harden them, and the heroes of Homer are usually described as without shoes when armed for battle. The shoes of the peasantry of the Abruzzi, in the south of Italy, to-day bear a close resemblance to the ancient Egyptian and Grecian footwear. Greek women, howere, wore shoes and their use finally became universal. There was great diversity in their fashion and the several sorts were named from the person who introduced them, or from the place where they came, as the shoes of "Alcibiades," "Persian," Cretan," "Athenian" shoes, etc. The "calceus" were like modern shoes in form, covering the whole foot and were tied with latchets or strings. Those worn by senators and patricians were high, like buskins ornamented with an ivory crescent and called "calceilunati." Some were made with tops and of all heights, even to covering the whole leg. These were called "calceamenta" and "cothurin." The tops were often of the skins of wild animals, lacing up in front and ornamented at the upper extremity with the paws and heads arranged in a flap that turned over. The skin was dyed purple or some other bright color, and the shoes were variously ornamented with imitation of jewels and sometimes with cameos. It was common to make them open at the toe, so that this part of the foot was left exposed. In our own country discoveries of ancient footwear have recently been made which provide interesting matter for reflection. In Colorado, relics of the old cliff dwellers have been unearthed that are of great value to the antiquary, and among them are some that appeal directly to shoe and leather men. Thousands of years ago these peculiar people are said to have lived and pursued their occupations in the western part of our continent, long before Columbus thought of searching for America. Leather goods of various textures, from the soft and perfectly tanned buckskin to others as fine and pliable as it would be possible to produce by any method known to-day, were found among these relics. There were also sandals formed of the skins of animals and woven from the fibre of the soap weed, with soles so firm and durable as to prove a perfect protection to the feet in clambering over the sharp rocks of that country. Others were formed of corn husks, in as good a state of preservation as if of but a seasons growth, while many were half finished or but just begun—a task, indeed, never to be finished, but valuable to us in proving unquestionably that such articles were made and worn by a race of people who inhabited this hemisphere centuries ago.

Leaving the subject as it relates to the ancients and coming down to medieval times, we find, toward the close of William the Conqueror's reign, boots reaching to the middle of the leg were introduced. They were made from the famous Spanish leather from Cordova, and from the Norman word "cordwainer," meaning "a worker in Cordova leather," has been anglicized the Saxon word "shoemaker." Later, we read of "slippers of purple with fret work of gold." Wooden shoes were in common use throughout Europe during the ninth and tenth centuries, and were even worn by princes, but sometimes highly ornamented leather sandals or shoes were worn. The use of wooden shoes, called "sabots," in Europe, is to-day confined to the peasantry. They are cheap and said to be comfortable, though they look clumsy and make a great clatter as their wearers trot along the paved streets. An effort was made to introduce them into this country, but without success.

Great attention was directed in the middle ages to this portion of the dress as well as to the covering for the head, and equal extravagances were adopted in both articles. The shoes were worn of different colors; the stockings also were unlike each other, and of different colors from either of the shoes. During the reign of William Rufus, a famous Dean, Robert, surnamed the "Horned," introduced shoes with long-pointed toes twisted like a ram's horn. The fashion was immediately adopted in France and carried over to England. Though vigorously inveighed against, the style became fashionable, and in the reign of Richard II the points kept growing larger until they reached the length of two feet, and were secured to the knee by chains of silver and gold, the point of the shoe extending away beyond the toe. The upper parts were cut to imitate the windows of a church, and the whole was made extravagantly conspicuous. For three centuries the clergy, popes and public officers sought in vain by declamations, bulls and orders to break up the custom, but fashion held sway, as it has in every age in the history of the world, until, by act of Parliament in 1463, shoemakers were prohibited from making for the "unprivileged classes" any shoes with points more than two inches long, and afterward excommunication was denounced against any person wearing such. The extravagant taste was then directed to the width of the toe, until at last Queen Mary was compelled to restrict this by proclamation to six inches. As we view the gradual widening of the shoes being made now, let us fervently hope that the breadth may not grow to equal the width of those mentioned, or that we shall be obliged by decree of fashion to wear such monstrosities as the ones described.

In the sixteenth century shoes were made of elegant buff-colored Spanish leather, with tops of enormous dimensions, spreading over so widely as to almost obstruct the movement of the feet. The Puritans wore such boot tops and after the restoration of Charles II, the French custom was introduced of ornamenting the upper edge with lace. Pictures and stories of Spanish buccaneers illustrate the pirate-kings rigged out in this sort of footwear. The present simple form of shoe was adopted in the early part of the seventeenth century, and in the latter part of the same the shoe buckle began to be used. During the succeeding century, this continued to be very conspicuous and so many were dependent upon its manufacture in England, that when it began to be unfashionable, in the commencement of the present century, the Prince of Wales sought to keep up the custom for the sake of the buckle makers.

In the present popularity of colonial ties, with steeple heels and Dutch buckles, we see a revival of a style of a hundred years or more ago. Shoes worn by ladies in the last century were sometimes very elaborate and costly, made of bright colored silk, ornamented with gold or silver stars and bound with different colored silk from the shoe itself. It is a singular and interesting coincidence that with the ever changing styles, the new fashions are often old fashions revived. Several years ago our dames and damsels were tripping about on high-heeled red slippers. Probably few of them ever dreamed that the fashion was first set by the Spartans and followed by the magistrates of Rome on ceremonial occasions. And the pointed toes, which a few years ago tortured us and distorted our feet, and which have more recently been succeeded by the rational, sensible and comfortable broad-toed footwear were invented by a Prince of Angou.

We see, therefore, that boots and shoes of all kinds have been worn; shoes made of leather, wood and reeds; brass-bound, iron-bound, gold embroidered and studded with jewels; wide, blunt toes, narrow, pointed toes. The Elizabeth shoe was a really artistic affair, and when powdered with gems and worn on the foot of a Sidney or a Raleigh, was a beautiful thing. When Leicester received the Queen at Kenilworth (Scott) "he wore shoes of white velvet." The Queen, herself, was a connoisseur in shoes.

The shoe had developed into the boot about the middle of the fifteenth century, and into stout boots, with tops and spurs. Then boots were so heavy that their removal fell to the lot of an attendant. After the revolution of 1688 the immense roses on shoes were replaced by buckles and large wide strings. Since that period the buckle has undergone every variety of form and dimension, and, in 1777, buckles and buttons on the coats became enormous.

High-heeled boots were worn by ladies for three parts of the eighteenth century. They raised their fair wearers some inches and rendered walking difficult and running out of the question. Very curious and to us interesting, is the footwear of the past. A few days ago the writer examined a couple of pairs made as recently as thirty or forty years ago. One specimen was a boot of green velvet plush, extra high, cut scalloped top, and faced with light blue kid. The boot laced at the side and was lined with brown drilling. The side opening, the scalloped top and the green plush tongue were bound with black galloon. It was Bismark, cut, with plain round toe and was made on straight last. The vamp was straight grain boned, scalloped all around and stitched with white. The heel was extremely high and narrow, with small top piece; the shank was decidedly sprung.

Clothing for the feet, therefore, whether in the form of sandals or shoes, has been in use in every country aspiring to civilization in ancient and modern times, and by a study of the subject we will find much to interest and instruct us. Change in styles, is one of the inexorable demands of the public and has been in every age and throughout every land since shoes began to be worn, and this is true in regard to footwear as well as every other article of apparrel.

Shoes of All Nations.

A careful review of the character of national footwear now in vogue in various countries of the globe forms a very pleasant and profitable study, and in a trip around the world it is interesting to observe the kinds of foot-covering worn by different peoples. Of the great variety of footwear worn by different nationalities, none are so uncomfortable, unnatural and nonsensical as those worn by Chinese ladies of rank. These ladies consider the diminutive size of their feet an unquestionable evidence of high rank, so the Chinese mothers distort and shorten the feet of their infant girls, by bending the tender little toes under the foot and binding them there. The toes form part of the sole of the foot; the heel is forced up into the ankle, which is usually large. All during their childhood the growth of their pedal extremities is checked by bandages, causing excruciating pain and distorting the feet in a disgusting manner. Some of the diminutive foot-coverings are but four and a half to five inches in length on the outside. They are made of gray or blue brocaded satin, richly embroidered with designs in red, green and gold thread or colored silks. The soles are covered with pale blue cloth and have a thin piece of leather tacked to the bottom. Others are of green and white satin, embroidered in Persian colors, and exceptionally dainty ones are of bright red satin, with very pointed toes, beautifully worked in pale blue and gold. So it seems there are styles in Chinese shoes as well as those of other nations, but it does not seem possible when contemplating the romping, rollicking American "youngster," that full grown adults on the opposite side of the globe can go mincing about on feet the size of which we would bemoan as a deformity on a child two years of age. Children of the "Celestial Kingdom" have their plain and fancy footwear, too, and doubtless admire "pretty new shoes" quite as much as the children with whom we are more familiar. One for a baby boy, is of red cloth, edged with green satin and fancy gimp. The toe, which is rounded and upturned, has appliqued on it the head of a beast with staring eyes, green silk ears and long whiskers of white silk dangling from a ferocious looking mouth, the combination being fearfully hideous and frightful enough to scare an American baby into fits. A shoe for girls of the lower classes is made of sterner stuff. The sole and high heel are cut out of a heavy piece of wood; the upper, which is made of one piece of very stiff leather, is open at the heel and tacked to the thick sole with round-headed tacks. It is a gay little affair, however, for the heel and sole are painted black and the upper bright red. It may not be generally known that all Chinese women do not have deformed feet. This mutilation is more frequently in the south than in the north and in cities than in the rural districts. Normal sized feet are found in many provinces of the empire. Sentiment is growing in favor of permitting women's feet to grow to a larger and more nearly normal size than has hitherto been the practice. A change is coming, slowly, of course, as all changes come in China. It is said Chinese feet at birth are normal and that binding has no hereditary effect in generation.

The impression in this country is that Chinese footwear consists solely of the silk or cloth, felt or paper-soled sandals in the style worn by our "John Chinaman," but such is not the case. Boots of leather or shoes of combined cloth and leather are largely used in some sections of the empire.

The thick-soled, white-edged shoes seen upon the feet of the Chinamen here are all imported from China—most of them from Canton—where they are made by hand. The white edge of the thick, rigid sole is made of a material resembling plaster, and if it becomes soiled, can be cleaned and whitened again. Some shoes have the wide edge of this sole finished with a glazed or polished surface, which can be cleaned by rubbing it with a damp cloth. The bottom soles of these shoes are made of a number of layers of rather thin leather, placed one upon the other, making a built-up sole. This sole is stitched through and through in many places on regular lines, giving the bottom of the shoe a sort of quilted effect. These keep the feet dry and warm, raising them out of the wet and mud. The soles throughout are made quite flat, without distinction of right and left ,and are always considerably shorter than the upper, the toe part projecting beyond the sole, in order to give a spring in walking. The work on Chinese shoes is neatly and trimly done, even on the cheap grades. There are some shoes without the characteristic thick, white-edged soles and provided with soles of leather only. The top of the Chinese shoe is of cloth or silk or satin, and the lining is of the same material. Velvet is often used on the tops, cut in patterns that are laid over the body of the shoe, which may be of silk or satin, in some bright color, while the velvet may be of black, producing picturesque and striking effects. Costly shoes are made of fine material, and are often richly embroidered, each section of the vast country having its particular fashion and mode of decoration.

During the rainy season, in the spring and in the north during the winter, leather boots with large headed nails in the soles are worn, and the Chinese shops carry regular lines of them. The common shoes and slippers often have leather soles. The "Coolies" generally wear straw sandals, but very frequently adopt leather ones in preference. In Mongolia, for winter wear, the leather boots are lined with sheepskin, and felt shoes made in western fashion are in general use.

The Chinaman is very particular about his shoes; torn shoes are rarely seen. Cobblers are to be found in the streets with baskets or boxes containing bits of cotton, cloth, leather, nails, etc., for mending shoes. Cheap burial shoes with felt soles are made for the dead. Velvet slippers and velvet boots are fashionable and shoes for housewear are usually made by the women of the house. Children's shoes are highly ornamented as already stated, often with figures of tigers' and dragons' heads and the like. Women's shoes are highly ornamented and richly embroidered by themselves. Instead of stockings, the women wear bandages of white cloth. A piece of embroidered material is usually placed around the ankle to cover the portion of the leg between the trousers and the shoes, where all are tied togther. This practice has been in vogue since the sixth century. The women's shoes have mostly a thin sole of wood, with a thicker heel piece covered with cloth. In the north of the empire, the women wear high heels under their flat soles for outdoor use in order to keep their elaborately embroidered shoes free from dirt. At home they use shoes like those of the men, with felt soles. For house wear, during the warm weather, the material is grass or split bamboo, and the sole is made of dried palm leaves, sewed together with strong twine. There is no heel piece and the sole is flat. An inner sole or lining of cotton cloth, Canton flannel or raw silk is sometimes inserted. They are strong and durable, and retain both shape and color.

All of the work upon Chinese footgear of whatever kind is done by hand. I remember seeing a couple of years ago three pairs of boots made in Philadelphia for the late Li Hung Chang and two of the dignitaries of his personal suite who accompanied the late Viceroy on his famous travels in this country. The samples sent by him from which these boots were made were worn by the three men at the time referred to. The uppers and tops, which formed a striking pattern of the regular riding boots worn by equestrians in this country, were made of woven satin material instead of leather. The linings were of silk and trimmings of velvet. The bottoms were of felt, three-fourths of an inch in thickness, with a rawhide outsole, quilted in the peculiar manner of the Chinese shoemaker. The new boots were of black glazed kid, lined with silk and had felt soles, the outside covering of which was chrome-tanned electric or gymnasium soling leather, instead of rawhide.

The work necessary to produce these boots in this country, where the art of shoemaking is so entirely different from that of the Chinese, can be appreciated only by those familiar with the business here, and the completion of the task reflected credit upon the ingenuity and cleverness of the American manufacturer.

The query as to whether or not the leather boot is to supercede the Chinese shoe is a problem too complex and intricate to intelligently prophesy upon, but whatever may be the ultimate outcome—and time only can unfold—it is certain that with the advent of Americans and Europeans, vast quantities of modern footwear will be introduced into the land of Confucious. Western civilization and methods are doubtless having their effect upon the deep-rooted conservatism of the Chinese. Every year finds them more reconciled to the customs of foreigners and who knows but what leather footwear may not slowly displace the Chinese shoe. Dealers of an enterprising turn should at least prepare for such an eventuality.

It is said great quantities of leather are tanned in China and used for many purposes.

In striking contrast to their Chinese neighbors, the thrifty, hardy little Japanese are quick to adopt progressive methods, no matter whence they come, and that people are so unquestionably advancing in the assimilation of Western ideas and enterprise which they pursue intelligently and thoroughly, that it would not be surprising to see European and American footwear universally adopted within a very few years. It is probable that in the near future, these busy little people will partake more of the fashions which prevail in what are commonly supposed to be more civilized communities. Since the introduction of European styles in clothing into Japan, European footwear likewise has come into increasing use. The ordinary demand for these goods is supplied mainly by local factories, but the home product is of the cheapest quality and though cheap, is far inferior in durability and finish to the foreign product, especially that of American manufacture. The consequence is that among the well-to-do Japanese, a demand is growing for imported boots and shoes. The principal requirement is that the toes be wide and roomy, because the sandals and clogs which are worn in childhood give full freedom to the fore-part of the foot and full growth results. Japanese do not bind the feet.

Imported boots and shoes are very largely worn by the better classes in the large cities. European footwear is used to some extent by military and naval officers and also by citizens. Low-cut shoes are preferred and the sizes range from four to eight. Glazed kid and patent leather shoes are affected by Japanese officials and gentry, and are a good deal worn by foreigners. By the average citizen, however, russet leather seems to be the favorite. Boots are seldom worn by civilians, but are used by policemen, gens d' arms and soldiers. Calf-skin and coarse cowhide boots and shoes are also somewhat in demand. There is little call for ladies imported shoes.

The poverty of the great masses of the common people and the climate will prevent a very general adoption of the clothes of civilization, but the intercourse between Japan and America is becoming greater each year and the upper classes are rapidly adopting Amerrcan manners and customs.

The suggestive name "sandal wood" grown in Japan is used as the base of simple footwear. This wood is very light and is still further lightened by hollowing out the centre. These sandals are attached to the feet by plaited or twisted felt cord. Sometimes shoes worn by ladies are lacquered and are fastened with a velvet band passing from either side the lower part of the instep and between the first and second toes.

The native foot-covering is a slipper made of rice straw of which there is great abundance.

The shoe in general use in the cities by the Japanese is an unique affair. It is built like an old fashioned wooden bench, and consists of a roughly shapen sole of wood with two pieces of wood set crosswise underneath to form the heel and toe. The shoe is flat on top, with a round woven loop or twist of velvet fastened to it in the shape of a triangle, the point of the triangle coming nearly to the toe of the sandal and the ends near the heel. When being worn the great toe is thrust under one side of the velvet roll the other toes under the opposite side. The strap which fastens the velvet roll to the sandal at the point of the triangle, comes between the great toe and the one next to it.

Another kind of sandal is woven of coarse native straw like basket work, the soles being perfectly flat, rounded at the toe and heel alike. A twist of straw is fastened on to secure the sandal to the foot. These are worn in the villages and among mountains. They cost the merest trifle, soon wear out and are thrown aside. In the agricultural districts foot-coverings are scarcely worn at all.

It is the custom in Japan as in most eastern countries to remove the shoes upon entering a house or temple. The house slippers, which are made of straw, with no heel or back, consist of merely a vamp, in the style of some toe-slip bed-room or bath-room slippers in vogue in this country. They are often decorated with straw fringe or gilding and are easy and comfortable. Women seldom wear boots or shoes of any kind, the native straw and wooden sandals being mostly used.

A very limited number of metal-tipped boots and shoes for children are used. Very good custom boots and shoes are made by the native and Chinese shoemakers, at prices which compete with the imported articles, and small shop work is rapidly increasing, but large shoe factories are to be looked for only as a possibility of the future.

When some of the beatuiful specimens of first-class American shoemaking recently exported to Japan are exhibited there, demand for that character of footwear will no doubt increase. Some German shoe factories using American machinery are reported to be in operation in Japan and there is a movement on foot to organize a company for the purpose of erecting a building in Yokohoma, installing machinery therein and making five hundred pairs of shoes a day.

The native shoe of India is a sandal, made of narrow strips of strong tan leather woven over the instep in a basket pattern, buckling behind through a stout strap and sewed to a strong leather sole. Among the queerest specimens from India sometimes worn by natives, but often adopted by foreigners is one perfectly flexible and yielding to every movement of the foot. Judging from appearance, they must be very comfortable and delightfully cool in hot weather. It is bemoaned by foreign travelers in India that natives do not know how to make boots and shoes and articles imported into that country are not much better.

It would be difficult to determine when boots and shoes of European pattern were first introduced to the favorable notice of the native shoemaker of India. It is probable that the Indian followers of St. Crispin took to making boots of European pattern about the beginning of the last century, whilst for many hundreds of years they have manufactured the sandal peculiar to India.

There are, in Hindoostan, numbers of native shoemakers and Oriental representatives of the craft, who apparently find it profitable to make "boys laced boots for school wear, patent leather buttoned boots, pumps and Wellington's." The tools employed by the "mochi," as the native shoemaker is called, correspond with those used by members of the craft in more advanced countries, but he does not make the same skilful use of them. As a maker of sandals he is a genius; as a bootmaker his workmanship leaves something to be desired. It is interesting to note that the "mochi" does not, as a general rule, seek the assistance of other operators. Unless he is doing a comparatively large business, he is his own cutter, fitter and laster. He is sometimes assisted in the operations by his wife. Following out his principle, he himself cuts out the boot, tacks the upper to the insole, sews in the welt and attaches the outsole, and builds up and fastens on the heel. He also does the edge setting, the rounding, polishing and final cleaning up. He is his own designer and cutter as well as manufacturer. The position assumed by the "mochi" when working is much the same as that usual among the European operators, except that the "mochi" sits upon the floor. The hollow at the base of the breast bone occasioned by the pressure of the last, which is noticeable in St. Crispinites the world over, is by no means uncommon among shoemakers of India. Their ancestors in the shoemaking line sat on the ground and they continue to do likewise. The Oriental is an individual of conservative tendencies, he is opposed to progress. As he has clothed himself in the turban, white pajamas and short linen jacket of the pattern affected by his great-great-grandfather, so he has inherited his ancestor's methods of working and ideas in general.

It is said that importation of boots and shoes into Turkey is increasing. This is because the domestic goods are inferior in quality and higher in price. Cheapness is a matter of great importance. The better classes in Turkey wear fine shoes and half-boots. The shoes worn by the lower classes are a very cheap and badly-shaped article. Ladies' and children's wear are wholly imported, mainly from France, Germany and Austria. Hundreds of pairs of heavy workingmen's shoes are annually imported from Malta. Overshoes are said to be customarily worn, both summer and winter and in rainy weather their use is general.

Practically there is but one boot and shoe factory in our sense of the term in the Ottoman Empire, namely, the Government establishment at Constantinople, where boots and shoes for the use of the army and navy are manufactured. These goods are nailed or sewed, and some hand power machinery is used. Turkish slippers, of which there are many manufactured, are made of goat-skins from the interior, dyed red, yellow, etc. They are familiar to us, being much worn for boudoir and smoking room use. They have pointed toes, which turn up and are often elaborately embroidered.

In many European countries wooden shoes, which were fashionable among the nobility in the ninth and tenth centuries, are in very general use among the peasantry to-day. They are cheap and durable and, though clumsy, are said to be comfortable. In this country an attempt to manufacture wooden shoes on a large scale was made in 1863, but the market was found to be limited and very few are now made. Those made are chiefly turned out in New York for newly arrived immigrants who reluctantly relinquish their wooden shoes as the last link which binds them to the "Fatherland," before adopting American dress fully and conforming entirely to western customs. The nearest approach to the European wooden shoe is the wooden soled clog, with leather uppers, made to some extent in this State. They are worn by miners, dye-house workers, tanners, etc. The wooden soles, which are one inch or more in thickness, are entirely hand made, being sawed from great strips of wood and fashioned by hand. To that is attached by tacks or small screws the upper, which is cut from split leather. The uppers are medium high cut and fastened at the instep with strap and buckle.

All the Europeans who handle footwear admit the vast superiority of goods made on this side of the water, especially in style, finish and general get up. They are usually, however, considered too light for their taste, as their custom has been an inclination toward heavy and cumbrous footwear. The peculiar style of shoe for the London market, we are told, is rather short, wide fitting, with heavy soles, medium pointed. The local made shoes have side seams and are generally well made, substantial, good wearing shoes, but lack the style so familiar to Americans. In Europe it is much more common to wear footwear with heavy upper stock than in this country, where people have learned that a light skin makes as good fitting and fine appearing shoe, and in many grades fully as durable as a heavier skin. No doubt there is some foundation for the prejudice of the average American tourist against the clumsy, uncomfortable European footwear.

The contrast between the factory system on this side the Atlantic and that on the other, is very marked. A European shoe factory employing, say one hundred operators, will turn out two hundred pairs of welt shoes per day; an American factory, with the same number of employes, will produce from four hundred and fifty to five hundred pairs, and although the wages paid to the American workpeople are higher per day than those paid the European operators, the labor cost of their work is less per pair than that of the foreign producer.

The recognized scale of prices for the different operators is said to be higher in England than it is here, but the difficulty in running full time cuts down the average wage earned below that of our own artisans. Notwithstanding the amount of wages paid, freight duties, etc., our manufacturers are fast encroaching on foreign markets. The style of the goods, the expertness of the operators, the methods adopted in contradistinction with those observed abroad, all combine in accounting for American supremacy. Moreover, superior sole and upper leathers are tanned in this country and abundant supplies and the most ingenious machines are obtainable immediately at hand.

The description given the writer by a recently returned American tourist, of an English shoe factory which he visited in Leicester, will give the reader an idea of the methods over there.

"Those who expect to see old, ramshackle, tumble-down factory buildings," said he, "will be agreeably surprised. The establishments are new, modern, substantially built structures. American machinery is employed and progressive methods adopted. The factories front on the street to the height of two stories, and are usually faced to a height of about eight feet from the ground with glazed brick; from that up pressed brick is used. The stock and packing rooms are on the second floor, the office occupying the space through the center of the same floor front to rear.

The factory proper is one story high, extending in the rear of the two-story building and is lighted by large sky-lights. A high ceiling admits of space for shafting and insures ample ventilation. The proprietor, from his commanding position in the office, has an unobstructed view from the end towards the factory, which is of glass, of every department of the works and can overlook in a moment all that occurs. Rules governing the management of the labor there, are different from those observed here. Work begins at eight o'clock; one hour is allowed for dinner, and the day's labors end at six, except when particularly busy and the factory runs until eight o clock."

The evident intention of the European makers is to reproduce American style and finish and to imitate the footwear fashions in vogue in this country. Signs and show cards, indicating that American footwear is sold are plentiful in London and Paris shops.

Men's shoes in Paris are, for the most part, limited to few styles and have somewhat effeminate appearance, looking more like women's shoes than men's. They are poorly lasted, soon lose shape, and are not neatly finished inside.

A French woman may be magnificently gowned; her hat the latest Parisian creation, her jewels the most costly and her other garments faultless, but her shoes, unless imported from America, lack style and the general effect is entirely spoiled. "Bootees," flexible at instep and ankle, resembling accordeon pleating, are noticeable among poor women. Shoes with wooden soles and leather uppers are worn in Paris. Felt shoes are seen and wooden shoes are largely worn among the poorer classes. The manufacture of shoes in Paris is on a limited scale. Few large factories are there, but in adjacent towns many such abound where goods of a medium grade are made. Fine hand-sewed shoes are made in Paris, but their manufacture is confined to small manufacturers, who occupy a room or two for the purpose.

American products are steadily winning their way all over Europe, although it is only within the last few years that manufacturers have bestowed attention upon foreign markets as an outlet for their production. American manufacturers in other lines are successfully reaching more distant fields and demonstrating that American products can profitably compete with the manufacturers of the Continental nations, and why may not shoes be added to that category also?

An era of low-priced shoes appears to have struck European markets, the demand being largely for the cheapest grades. Manufacturers have, therefore, directed their attention to the production of a shapely and elegant looking shoe at the expense of its wearing qualities, and it would seem that if an article combining durability with tastefulness of appearance could be introduced it would sell well. Competition has become so keen across the water that manufacturers are using every means to cheapen production. Machinery and labor-saving devices are being introduced, goods are being turned out in large quantities to cheapen the cost and makers are selling directly to the retail trade to save middleman's profit.

Italian footwear is for the most part beautiful. Some are made of one piece of leather, the only seam extending from the ball of the foot to the first button. The upper leather extends down to the sole and heel, completely covering the latter. No tips are used and high cut shoes with high heels are the rule.

While foreign-made shoes for the most part are rough, crude-looking affairs, many are models of careful, painstaking workmanship. Some have embroidered fancy work, beading and other ornamentation. European boots are notably excellent.

A number of shoes made in Europe were recently sent to a manufacturer here to be duplicated. One sample was an infant's sandal of tan calf. It was McKay sewed and had paper stock lining. The heels had been attached with brass nails, evidently by hand, and instead of a spring heel there was merely a top lift. A fancy colored pompon instead of bow decorated the front. The channel was wide open owing to the absence of groove for the thread, which was much too large and coarse. Altogether it was an odd-looking shoe. Another specimen was a woman's button boot. It was made of sheepskin and had pasted heels, and sock lining of white sheep. This was a turn shoe, with a narrow toe. A black tassel decorated the front.

Shoemaking is one of the most flourishing industries in Russia. Leather boots and low or half shoes are mostly in use. Fine shoes are worn in the cities, while in the country only those of Russian manufacture are worn, owing to their cheapness and durability. The Russian manufacture is good and cheap, but is not so elegant as the imported goods. The shape of the average foot is pointed and narrow. Heels usually incline toward the Frenchy—high and narrow. Button and lace shoes are chiefly in demand in that market. In summer, low shoes have the preference. A large demand is for top boots. Officers wear an extra quality of calf and patent leather. The Emperor and all members of the Imperial family, being officers of the army, are, it is said "always dressed—at church, ball or at home—in parade or field uniform, with their trousers inside their handsome patent leather top boots." The ordinary laborers wear a coarse quality of shoes, made of horse leather. The Russians manufacture a good article of rubber shoes, with American machinery, and export the same to most of the northern countries of the empire.

There is one large factory in St. Petersburg making boots and shoes with American machinery, and two or three smaller factories in Poland that also use American machinery.

In Siberia, leather is largely used as an article of dress by the natives. During the milder part of the year, a robe made of very pliable leather, stained with yellow dye, is worn outdoors and indoors is frequently laid aside. Women wear boots made of this leather. They fit tight to the leg and have at the top, a flap of black leather with red cloth trimming, which can be turned down and exposed for show in fair weather, or, in stormy weather turned up, bringing the boots to the thigh. On each boot are two large leather thongs, five or six feet long, to wind around the leg. Waterproof boots, called by the Russians "torbasis," are made there. These are cut from horse hide, steeped in sour milk, then smoked and finally rubbed well with fat and fine soot. They last exceedingly well and are said to be of inestimable comfort to the wearer, enabling him to tramp through snow, water and mud without inconvenience. The dwellings of the Siberians in winter have doors of raw hide.

The production of boots and shoes in Belguim is ample to cover the national wants and to partly supply Holland. Brussels, Antwerp and other large towns have a number of large factories. Luxury is not great in footwear, but some of the women's shoes come from Paris.

In Holland men's lace, button and congress shoes are in greatest demand. As a general thing styles are very poor and in a large majority of cases are quite shabby in appearance. In the cities, workmen in various industries wear common shoes. In the country the farmer's shoes are not quite as heavy as those worn by American farmers. The women use button or lace; in the better grades tips are worn and medium toes. In men's shoes, the tips are narrow and a little elongated. Materials most in use are satin-calf, calfskin, glazed kid and Dongola. Slippers and low shoes, with wooden heels, are worn. The average shape of boot is toward flat and broad. Paris made, high class shoes find a good market, while Vienna supplies only cheap slippers for women, in black, brown and white, with wooden heels. Local shoe manufacture is of importance and consists chiefly of hand work. There is demand for ladies' fancy shoes at moderate prices, and workmen require low-cut heavy Bluchers.

Sweden, with its population of five millions, has a considerable consumption of leather and of boots and shoes. There are eighteen or twenty relatively large shoe factories and numerous custom shops, employing twenty-five to forty workers each, and new factories are being established. The greater part of the men's shoes manufactured in Sweden are made of horse hide, very seldom of calf or kangaroo leathers, but patent leather and all kinds of glazed kid in black and colors are used. The ladies' articles are made of calf, kangaroo and all kinds of kid and sheep leather. In summer the well-to-do men wear patent leather and colored calf-skin shoes; the ladies, morocco of different colors, among which even green finds a place. Brown and yellow shoes are very much in evidence among both sexes.

In Stockholm an American shoe factory has been established and American mechanics engaged in manufacture of shoes according to American methods. In that city also, are several more shoe manufactories, also numerous leather dealers and large shoemakers' establishments for hand-sewed work.

"In planning an incursion into the European markets, American manufacturers of boots and shoes should not overlook Switzerland," writes a United States consul in that country. "During the past three years, boots and shoes amounting to $28,860 have been imported from this country, indicating the invasion by American shoemakers. This increase averages about 50 per cent. each year. "These statistics," the report continues, "give only the figures of the direct importation and do not convey a correct idea of the number actually imported, for most of them come from distributing points in Germany, and are entered at the Swiss frontier as originating in that country. Although the manufacture of boots and shoes is one of the leading industries of the Swiss Confederacy, considerable importations, however, are made. Five years ago it was not possible to buy an American shoe in Switzerland, but now it is no novelty to see in the shop windows of the largest towns shoes with a little American flag displayed thereon, and the announcement that they are American made. At Lucerne, two year ago, there was not a shop which kept American shoes; last year five of them had them on sale, and sold out their entire stock and could have sold more had they had them on hand. This is despite the fact that one of the largest shoe factories in the world (turning out 5,000 pairs of shoes a day) is situated in Switzerland, and is an important exporter to the Latin-American countries."

It is estimated the four-fifths of the annual consumption of footwear in Switzerland is of domestic production. The general rule is rough, heavy, coarse leather footyear, usually cheap, unshapely and clumsy, although some of the local makers are fair.

A peculiarity of the Swiss boot and shoe trade is that a finer grade of footwear is made for their export than for their domestic trade, while the importations include both high and low grade shoes. The boots and shoes imported from the United States are of a higher grade and price than the domestic article. A considerable amount of the commoner footwear used by the agricultural and laboring classes, as well as by the poorer classes of citizens in the cities, is made in the penitentiaries of the cheapest material obtainable. Just as Switzerland both exports and imports boots and shoes she also does a considerable trade each way in skins, rawhides and in leather. Owing to the great numbers of tourists in Switzerland, good retail stores abound.

In Germany, the styles of shoes are more modern and in conformity with American ideas, although the people in Germany apparently care but little for the appearance of their feet. If their other apparel is of good material and stylish in cut the people are evidently satisfied. Wooden shoes are largely worn by the peasantry; in fact, the number of wooden shoes still worn by Europeans in country villages is surprising.

It is said among the many fads of Emperor William is his passion for collecting boots and shoes of famous people; his collection of this particular article of attire constituting a fitting adjunct to his huge museum of uniforms. The collection is kept in the marble palace at Potsdam and there are some two thousand pairs, ranging from Greek sandals and a pair of slippers reputed to have belonged to the great prophet Mahomet, to the boots of Wallenstein, of Gustavus Adolphus, of Peter the Great and of Napoleon Bonaparte. It is said the Kaiser is desirous of adding some of the footwear of George Washington to this collection.

The writer recently met and interviewed a shoe manufacturer from Vienna, Austria, who was touring this section, inspecting some of the local factories in order to become more familiar with the methods employed in making American shoes. These methods have since been put into operation in his factory in Vienna. His establishment is now equipped with the most modern American appliances for making shoes, and is said to be the first in that city to introduce Goodyear machines. He manufactures men's, women's, misses', children's and infants' shoes, including soft soles and slippers. In 1885 he first started to manufacture in a small way and in the few years intervening his business has increased to present proportions. Numerous cases of a similar character abroad might be cited.

One firm in Barcelona, Spain, operating two factories under the American system and after methods in vogue in this country, occupies an aggregate of 70,000 square feet of floor space. The firm manufactures 1,500 pairs daily of men's, women's, misses' and children's shoes, and employ 400 hands.

From far off Siam comes information that even the Siamese are adopting leather footwear.

American boots and shoes are said to be slowly gaining in popularity in Africa. Laced boots are mostly used there; very few congress, but a few buttoned ones are sold. Bluchers and heavy mining boots are sold in Johannesburg and other regions. Footwear with rounded toes and military heels are most popular.

It is said that the Boers have shoe factories for the manufacture of their own shoes. They also make crude saddles and harness for their own use, as well as belting and leather articles required in military equipment. They raise cattle, tan the skins, and complete the entire process of manufacture, so they are independent of outside supply for footwear. There are numerous shoe factories in the Transvaal, but it is said to be difficult to obtain contented reliable employes. Expert workmen are plentiful but the close proximity of the gold fields and diamond mines creates a feeling of unrest in the minds of workmen.

A London leather factor en route for home from Australia said to the writer recently, "While men's shoes worn in Australia are for the most part staunch and stout (although the climatic conditions do not seem to warrant such heavy footwear) glazed kid, is used to some extent in uppers for men's shoes. The increasing popularity of American goods is apparent. There is a strong sympathy in favor of American products and a growing tendency on the part of traders to give greater attention to their introduction and sale. In Australia up-to-date shoe factories have been erected and for the most part American machinery installed. In men's goods the greatest sale is in the medium and good grades; ladies' medium grades are the best sellers. The shops also run on cheaper grades of men's shoes, which, though lacking in style and finish, seem to suit the trade. The stockmen, boundary riders and roustabouts care little what shape shoe they wear so long as they have comfort at a low price. The Australian "bushman" is much in the saddle, and the light shoe is, therefore, proper weight for 'bush' trade, in the country districts remote from principal towns."

A peculiarity of some Portugese shoes is that they have wooden soles and heels, with vamps fancifully made of patent leather, showing the flesh side of the skin.

The Persian footgear is a raised shoe and is cut a foot high. It is made of light wood, richly inlaid, with a strap extending over the instep.

The Muscovite shoe is a band woven on a wooden frame and little attention is paid to the shape of the foot. Leather is sometimes used, but the sandal is generally made of silk or woolen cloth.

The Siamese shoe has the form of an ancient canoe, with an open toe. The sole is made of wood, the upper of inlaid wood and cloth, and the exterior is elaborately ornamented in colors, with gold and silver.

In distant Siam, there is evidently a desire for artistic modern footwear. An order recently executed by an export firm for the King and Queen of Siam, consisted of forty-two pairs of slippers. Half of these were to be ordinary court shoes, the remainder Grecians. The embroidery on the court shoes extended around the shoes, on the front of which was the monogram of their majesties, executed in gold bullion. For that, as well as for the raised floral decorations, special embroiderers had to be employed, as the work was beyond the skill of the ordinary operators.

But enough of the old world and its curious shoes and quaint shoemaking. Let us turn to the newer world of our own western hemisphere. Our next door neighbors, the Mexicans, are great and famous leather workers. Most of their work is done without the aid of machinery, by small operators or individual artisans. Patient and painstaking must the leather workers be, for their task is long and laborious and great skill is required. The designs are first traced in the leather, then chiselled out with the aid of a small chisel and a wooden mallet. The blows must be dealt with even force, otherwise the design is spoiled and worthless. Practice makes perfect, and the leather worker soon becomes expert. But, however skilful the Mexicans may be in their decorative leather working, they are but inferior shoemakers, and the number of properly equipped factories in the republic is limited. There are, however, a few factories where shoes are made of Mexican leather according to American methods. Considerable business is done in imported shoes at about double price, and their superiority is unquestioned.

The Chilean government has fostered the native shoe and leather industries by imposing heavy duties on importations, and, in consequence, a considerable proportion of the domestic requirements are supplied by their own establishments. This obstruction to commercial freedom, however, it is said, need not prevent American manufacturers of boots, shoes and leather goods from considering whether or not they can push a better business in the Chilean market in the future than in the past.

Shoemaking is one of the principal industries of Valparaiso. The Chilean shoes are very light and do not last long. English shoes are preferred, as they are more serviceable, and some coarse and strong shoes are imported from that country. Very few American shoes are sold in Chili. Patent leather and shoes for children—the latter coming chiefly from Switzerland—are imported in considerable quantities, as few children's shoes are made there. It is said an English firm will soon establish a shoe factory there, with English workmen, for the manufacture of shoes.

In addition to the factories, there are a number of shoemaking shops spread over the country, in which footwear of fairly good quality is made to order. Chili is fertile, too, in the production of salted rawhides and in goat skins. Sole leather is largely manufactured in Chili and large quantities are exported. There are a few tanneries making upper leather, but it is not of much account, and French upper leather is imported. The patent and colored leather comes from Germany. There seems to be no good reason why American trade should not be extended in Chili and all South American countries as well as Mexico. The Chilean tanneries have not yet reached the point of making superior grades of fine leathers, which will doubtless continue to be brought from abroad for years to come. The establishments engaged in the manufacture of leather for shoes, harness and leather goods are few throughout the country. The largest of these factories, which are located in the chief cities, use some machinery; others employ hand work only.

In Brazil are a large number of shoe factories, the majority of which employ steam power and are operated on a considerable scale. At Rio de Janeiro and at San Paulo shomaking forms an important industry. As a general rule, boot and shoemaking of the country is confined to the manufacture of the common kinds of men's wear. The hide and leather business forms a substantial item in the general trade and commerce of the country.

Boots and shoes are now being manufactured in the Republic of Columbia, and the industry is said to be growing. It cannot be said that the manufacture of these goods is done on a very large scale, however. They are made in small shops or factories and almost entirely by hand, very little machinery of any kind being used. The shoes made there are almost wholly for sale in the interior.

It is related of the women of Paraguay that they have begun to wear the modern woman's boot, which is somewhat of a social revolution.

A shoemaker who had settled in that country recently gave a handsome pair of boots to the wife of the gefe, one of the local officials. That lady "set the style" and thereafter the shoemaker had all he could conveniently do.

In Uraguay boot and shoemaking is prosecuted to such an extent as to not alone supply most of the local requirements, but to furnish considerable quantities to neighboring countries.

Very unique sandals are made on a large scale by native workmen in Venezuela and their manufacture forms one of the most important industries of the large cities. The output of one factory in Caracos is twelve hundred pairs of these slippers per day, and the same factory makes boots and shoes. The design and quality of these sandals, or slippers, is peculiar to the country. They have a sole of unusually heavy red leather, with canvas vamp, side strap and heel piece. This canvas is sometimes of variegated colors, but more frequently white is used. The soles of the sandals project a full quarter inch all around and protect the upper from wear and give additional breadth of tread for comfort. The soles are moulded to fit the shank and rounded on the bottom; they are channeled on the inside and the upper is drawn into the channel and fastened by a cord extending the length of the shoe. There is no lining to either the sole or the upper. These sandals are worn without other foot covering, and are particularly well adopted to the mild climate of the country, while the heavy, serviceable soles withstand the hard wear and tear of sand and rocks. A hole in the toe allows water to run out without removing the shoe.

The soldiers of the Venezulea army wear these sandals, with white canvas uppers.

The number of boot and shoe establishments in Buenos Ayres, Argentine Republic, in 1898, was 788, employing twenty-two hundred persons. Most of these establishments produce hand-made custom goods, but several are well equipped with power machinery.

Bogota, the capital of the Republic of Columbia, and other cities of the country, it is said, offer excellent opportunities for the establishment of modern retail shoe stores. The few shoe stores there sell at high prices, a poor grade of boots and shoes made in the cheapest manner. There is one unusual feature about the shoe trade in that country, that is the style seldom, if ever, changes, "Once made, always the same," seems to be the motto, the only difference being in the quality and the low quarter or high shoes and the style of heel.

The form of the shoes used in Panama are high laced and congress boots for men, boys and youths. Ladies and misses use mostly high button boots. Misses and children use spring heels, while adults, both men and women, mostly use low English heels. Oxford, or low, shoes are very little used, while "Faust" slippers are coming into use by people who cannot pay for better shoes.Patent leather is very little used, glazed kid and calf skin being most in favor and black the shade preferred, although russet is in some demand. Medium and narrow toes are the favorite, and tips are largely used. Laborers on the canal and railroad work buy cheap, laced "plow" shoes. Country people wear few shoes, and when they do they buy the cheap cloth footwear, with soles of twine and rope. As a rule, the native foot in Panama is short and wide, with high instep. Local made shoes are good and for every-day use are mostly called for. The work is cheap and made mostly for women; low-slippers are made of light kid or calf leather, without heels to a great extent.

Leaving South America and the Isthmus, let us take a glance at the footwear styles in vogue in the new possessions of the United States —Cuba, Puerto Rico and Philippines—as that is particularly timely just now.

The best people of Puerto Rico generally wear shoes similar to the styles and qualities worn by the better classes in other parts of the United States. They are imported from United States, England or France, or are made in large local shoemaking establishments, which do excellent work. The shoes worn by the poorer classes were formerly imported from Spain. They had a shabby-genteel appearance and their make-up was of the poorest and flimsiest character. The materials, as well as workmanship, were cheap, and although the prices were low, they were out of proportion to the low grade of the goods. The feet of the native Puerto Ricans are short and thick, broad at the ball and comparatively narrow across the toes. The instep high and full.

In Puerto Rico, congress gaiters of calf skin for both men and women are in vogue; button and lace shoes of calf skin and imitation button of the same leather rank next in order. Men's and women's patent leather and quantities of fancy shoes and slippers are in demand for women's and children's wear. Fancy shoes of various kinds and some riding boots, as well as canvas sandals, with rope soles similar to those used in Mexico and South American countries are worn. Low-cut black calf-skin shoes are in some use by both sexes, as well as both high and low-cut russets. As a general thing, the men's calf shoes, which are mostly congress, are made of the poorest material throughout. The upper and sole present the appearance of being glued together, so closely do they meet at the edge; the toes are narrow, blunt and rounded, inclining toward the pointed toe; the heels high and somewhat tapering, and instep high. The russets are laced, but otherwise similar in appearance to the black congress shoes. The women's high shoes are fastened with hooks and many are imitation lace or button. They are common-looking goods, evidently of inferior material. The low shoes are equally unattractive and the slippers are cheaply made affairs. The "alpargatas" are simply closely woven soles of fibre, with a white or colored canvas upper, roughly stitched on. A very general article of wear among women is a hand-made knitted slipper, elaborately and expensively made of wool and silk. Similar slippers are worn by men for house use.

Every one knows, of course, that feet vary considerably in different countries. Climatic conditions, average size of the race, manners, habits and customs all have influence in regulating size and shape of the feet.

There are some features and peculiarities of the Puerto Rican trade which the manufacturer or exporter should observe to insure success, and to understand this it must be noted that the average Puerto Rican is of short stature, with feet correspondingly short, as well as thick and wide, with a high instep. Consequently, the market requires a broad last, high instep and a shoe roomy and full over the ball of the foot, immediately forward of the instep and extending thus all over the front part of the upper to the toe, or tip. This is applicable to both sexes. Shoes made long and tapering, to give a shapely effect, can rarely be sold. The shoe required is short, wide and very full in the upper, being stubby in appearance, without having the wide toe. Shoes made by the local factories are badly made, of the lowest quality of leather, poorly tanned and of linings, trimmings, etc., still worse. All prices are high, considering the quality received. Some of the higher priced goods are all leather, but the cheaper grade are made with paper soles, covered with a thin layer of leather, and are the faulty putting together of the cheapest materials. Men's congress gaiters are much in use and more popular than the lace or button shoe. There is a market for cheap canvas shoes and for a cheap low-cut patent leather shoe. Lace shoes for women are not so popular as a button, but a shoe fastened on the side with a series of hooks is much in favor. There is a good demand for neat, cheaply made and fancy lines of ladies' and misses' slippers.

A few modern up-to-date shoes would make a good object lesson for the Cubans. Nearly all the women's shoes formerly sold in Havana were awkward looking affairs imported from Spain. They were crudely finished and high in price.

The leather in Cuban-made shoes is badly tanned and of little value. It is impossible that it should be otherwise, as the cattle from which the hides are obtained are poor and almost worthless. The native shoe factories are one-story buildings, badly constructed of brick and plaster, with the whole front open to the street. The workmen, few in number, sit on low benches and do their work leisurely by hand, in a slipshod and unworkmanlike manner. Some of the men work in the front part of the building and others in the room next to the little court-yard in the rear, but no skilled labor is in evidence anywhere. Most of the factories have a kitchen connected with them, the proprietor boarding his men. Work begins at seven in the morning, the men starting in on a light repast, consisting of a small cup of coffee and a roll. At 10.30 o'clock they have their breakfast and then nothing again until 6 in the evening, when dinner is served. After that, those who have homes go to them and the other sleep where they can on the premises. In addition to the workshop, kitchen and sleeping rooms, in the limited space occupied by the factory, a horse is usually stabled in the small court-yard in close proximity to the kitchen. What a revelation to the full-fledged Cuban shoemaker would be a model Pennsylvania factory, with its perfect sanitary construction and abundance of light, the machinery and ingenious mechanical appliances presided over by hundreds of expert operators, with sound minds and bodies, reflected by cheerful countenances and having comfortable, happy homes to go to after the labor of the day.

It is important to know that Cuban feet are generally short and have a high instep. Those of the women are small and somewhat narrow, but like the men have the Spanish arch. Shoes in general use are Congress and laced shoes, glazed kid and calf skin of both black and russet being the favorite materials. Women's and misses' shoes are button and laced or Congress gaiters imitation button. Laborers in city and country wear cheap and very poorly made shoes, but the article most generally used among them is the sandal, with a hemp rope sole and white cotton duck upper.

Respecting the outlook of the shoe and leather trade in the Philippines. The leather used is of poor quality and the shoes worn have been almost exclusively of local manufacture, very little having been imported up to the time of acquisition by the United States. The supply of shoes under Spanish dominion was drawn from Spain, France, Austria and the local shoemakers mostly Chinese. Owing to the inferior quality of the shoes worn, the consumption is greater than is general in some other sections. The shoe most commonly worn by the natives, consists of a rough wooden sole and heel, with carved leather toe piece attached to the sole with small nails. The toe is open at the end and the shoe is laced with a thong of leather. Natives also wear a slipper without a heel, which is made by the Chinese. The trade is divided into two grades. The better grades are sometimes sold in conjunction with other goods and the inferior grades are found in native and Chinese shops.

With the influx of European population that has followed American conquest and occupancy of the islands and the number of American feet belonging to the army of occupation that will require change from the regulation army shoe, there has naturally arisen quite a demand for American made boots and shoes of the better grades, and footwear similar to that in general use in other parts of the United States will, ere long, be the rule.

Present-Day American Styles.

Contrasted with shoes of other nations, the American shoe is a thing of beauty and originality. It is not copied after any foreign design. The American shoe manufacturer is an originator. Style after style, improvement upon improvement, new features and new ideas have steadily evolved from the minds of the manufacturers, to give comfort, ease and grace to the feet.

The highest perfection in shoe manufacturing has been attained in the United States, largely owing to the ingenuity and enterprise of mechanical genius, and it should be a source of much national pride that such is the case and that American shoes have become the standard of footwear the world over. A shoe like the American made article can not be had manufactured anywhere outside of the United States. Well-shaped shoes are not made except in this country, and the reason is that there are no operators like the American and no shoe machinery in the world so ingeniously contrived to lessen the labor and reduce the cost of production, at the same time add grace and finish as the American shoe machinery. Operators in other countries may be taught by Americans, it is true, but they some how fail to get the knack of it. An American workman is a genius in every sense of the word; he understands his machine and makes it a part of himself. The average workman abroad cannot easily adapt himself and the shoes he turns out have a crude, clumsy appearance.

American enterprise and ingenuity have brought the products of American labor to the forefront the world over. The skill of the American workman is universally recognized and the reliability of his work accepted, as is shown by the fact that our exports of delicately adjusted and complicated machinery are constantly increasing. Many machines are sent each year to more distant localities, where they would only be acceptable upon the assurance gained by actual experience that they can be relied upon to perform their functions in unfamiliar hands. The markets of the world are being pre-empted by American rivals, the superiority of American goods being clearly recognized.

It is not because of their cheapness alone that American shoes have been favorably received abroad, but because of their style and make-up. There is a heaviness and clumsiness of outline in the goods made outside the United States that contrasts unfavorably with the sharp, clean-cut, contour of American products.

The importance of a well-fitting shoe is great and cannot be over estimated. The modern American shoe, rightly fitted to the foot, is not only comfortable and sensible, but presents a neat appearance. The foot of the wearer rests solidly and comfortably and is far better adapted for walking than the slipshod sandal or many of the badly shaped specimens we have attempted to describe. Our shoe has several features provided in it so that the pressure in walking is equally distributed over the foot, first by the top, in the lace, button or Congress shoe, next by the instep and the incurving counter for keeping the heel in place, without chafing, and lastly by the ball of the shoe. By a nice adjustment of these various points to meet the requirements of the individual foot, ease, comfort and adaptation unexcelled by foot-covering of ancient or medieval times is assured.

One of the most interesting trade features is the development of changing styles. Changes are no longer radical as of yore, but come about almost imperceptibly to those not actively engaged in the industry, and glide from one to another until a style has become thoroughly established.

A good many people who are not conversant with the inner secret of such matters, no doubt imagine that styles originate solely with the public, and that manufacturers and dealers only cater to the demand after it has been created. To some extent this may be true, but usually quite the contrary is the case. Months before the public has any intimation of it, ingenious manufacturers and dealers are settling the question as to what the style shall be the next season or the following one. Of course, these nicely laid plans as to styles sometimes go amiss, because the public doesn't take to them.

Shoe buyers have a powerful influence in establishing styles too. The expert buyer will examine newest samples displayed by salesmen and critically analyze and inspect the latest things produced by manufacturers, but does not necessarily accept the shoe as per sample. He invariably has such changes made as shall better suit the known taste of his trade and what, in his judgment, will have a tendency to bring out the shoe in detail to the best advantage. He also designates tips and extensions, such as he believes will produce an harmonious shoe.

Any special events out of the ordinary often influence the trend of styles. This was noticeable during the Spanish-American war, which gave a military turn to taste in dressing, and we had the military cape, hat, shoes, etc. Athletic sports gave us the "outing" shoe, and to the popularity of out-door exercises is undoubtedly due the death of the "razor and needle-toe" shoe in high favor a few years ago, and the universal adoption of comfortable sensible and natural shaped footwear. In fact, it is impossible to associate outdoor sports with narrow-toed or high-heeled shoes.

At one time it must have been almost impossible for women to walk correctly, for they persisted in putting their feet into shoes so narrow, with heels so high, as to throw the body out of position and prevent a graceful carriage. This was changed in time, however, and it became no longer correct to wear high-heeled shoes. In consequence, women who were wise enough to conform to this sensible edict of fashion became healthier and more graceful.

Take, for instance, a ladies' ball slipper of sixty years ago. It is unique and exceedingly interesting. One shown to the writer recently was a turn, strictly hand-made throughout and was exceedingly light. It had fine silk lasting top, silk bound by hand. It was drill lined, with lamb bottom lining. There was a side seam, but no seam at the back. The soles were straight, with square toe and no heel. A long, slender silk lace served as tie over the instep.

Another relic of the past generation is a shoe made in 1832. It is a ladies' hand-sewed, turned shoe and laced at the side. The topping is of the finest serge, with morocco foxing. The toe is square, and the sole is the same width from toe to heel. The chief features of this shoe are the extreme thinness and flexability of the sole and the peculiar shaped spring-heel, the bottom of the latter being covered externally and on the inside concave to fit the heel of the foot. The eyelets are hand worked and are ten in number on each side of the opening, which extends to within one-half inch of the sole. Altogether, this is as queer a specimen of footwear as any one can imagine, accustomed, as we are, to high-cut, laced or buttoned boots, with their usual accessories of heavy soles and comparatively broad heels. Nevertheless, this shoe possesses a beauty of its own, and there is a character in its lines.

Another specimen which has recently come under the writer's observation, is a woman's hand-made welt, with cloth top and patent calf slipper foxing. It has cone buttons and figured silk lining, and was made on a straight last. It has short gauged heel and is bridge stitched. Although a welt, the sole is as light as a thin edge turn.

One of the most interesting changes in ladies' footwear is not in style but in size. The average size of women's shoes to-day is larger than formerly. One reason is the common sense of present-day mothers, and the favor with which all out-door sports are received.

No one need be ashamed of having large feet nowadays, for the big, well-nourished girls hygienically brought up who are to be seen all over the country have large feet in proportion to their well-developed bodies. These sport-enjoying, healthy, freedom-loving women of America may clothe their feet properly, sensibly and comfortably and trudge along mile after mile with ease. It is not necessary for the feet to look clumsy, even though low heels and thick-soled boots are worn. These are made so trimly now that they give a stylish look to the foot and well-fitted and well-chosen are the finishing part of an up-to-date costume. The popular boots fit snugly over the instep. They have rounded toes, glazed kid or patent leather tips, thick soles and comparatively low heels. Either lace or button boots are worn. The more dressy boots are of patent and enamel leather, with kid tops.

As in the case of alteration in styles of toes, so have heels been altered as well. The level-footed sandal was first heightened by raising the back end of the sole. As is usual with new departures, extremes followed in course of time the innovation of heels, as they have in other portions of the shoe. From the rather insignificant rise of a single lift, it attained the height of the French heel of Louis XIV, reaching the limit in the stilt-like Swiss "choppine." At a later period, heels gradually became lower and lower until the common-sense heel was evolved. Now there is a tendency to grow again and although the high tapering little French heel is but little used for street wear, the popular Cuban and military heels elevate the wearer to a considerable height.

The woman who aims that her footwear shall be correct in every particular and entirely up-to-date must have a wardrobe well stocked with various styles of shoes. She should have one or two pairs of heavy shoes for general out-door wear. These walking shoes have heavy soles, low, flat heels, broad, round toes and may have calf skin or kid tops. They may be laced or button, according to her fancy, and the extent of her means will determine whether or not these boots are purchased ready made or are made to measure by a fashionable bootmaker. However, the advent of elegant factory-made shoes on the latest style lasts and from the most approved fashions and designs, renders the ordering of footwear to measure unnecessary. For golfing she wears a sturdy high-cut russet boot, with rubber discs on the soles to prevent slipping, and for pedestrian excursions, country wear or mountain climbing, an extra high-cut boot of heavy black or tan grain leather, with thick extension soles are necessary. If she rides horse-back, a pair of patent leather riding boots which reach almost to the knee are indispensable. They are made just like a man's boot, with neither laces or buttons, and have plain rounded toes with low, flat heels. For receptions, teas and other dressy occasions, there are buttoned shoes, with tops of fine Dongola and patent or enamel leather vamps and Louis XIV heels. In the evening my lady is resplendent in Oxford ties of patent or enamel leather, or slippers may be made of satin to match her gowns. Handsome kid slippers, either jet embroidered or finished with a large buckle are also among the shoes for evening wear. For rainy days the woman who does not care to be encumbered with heavy shoes has a layer of cork placed between the outsole and insole of her shoe. Rubbers are also made in every style, size and shape of toe. For milady's boudoir are to be found neatly quilted satin or felt bed-room slippers, with fur tops and in every conceivable color. These are appropriate for younger women, while "Old Ladies' Comfort" shoes and slippers in sombre hues are more suitable for women advanced in years.

Although new lasts are being constantly introduced into progressive factories, a glance at the prevailing and probable styles of boots and shoes reveals the fact that so great have been the improvements in the style and finish in footwear during the past few years that the outcome of perfection in this direction seems to have been almost attained. It is cause for but little wonder, therefore, that the standard and staple lines for the coming season will show but little change in style from those of the season just closed. The common sense styles seem to be satisfactory, as there is no radical change demanded in the style of lasts. The popularity of heavy shoes is evidenced by the large quantities sold. For comfort and durability, shoes thus made cannot be excelled. They possess also a neat style, for, although somewhat masculine in appearance, the lines are dainty and graceful. The thick, round-toed laced or buttoned shoes, continue in favor all through the lines. These have extension soles, rope stitched and are made of glazed kid, patent or enamel leather, and some have bright vamps with dull tops. The strictly bull-dog toe, so popular two or three years ago, is, however, no longer in vogue, and although the extension of the sole continues, women's shoes are being made rather lighter and have more of a feminine look. This as regards walking shoes. For carriage or house wear shoes and slippers are light and dainty as could be desired.

The Colonial tie is now very popular for women. It is an imitation of the shoe worn by women in the Revolutionary period, and is a fair representation, following closely the original type. Any modifications made by our manufacturers have tended to render the tie of the present day an improvement over its Colonial contemporary. A conspicuous feature in this shoe is the high, flaring leather tongue, which forms the background for a large buckle. The great variety of beautiful, artistic and tasty goods in this line leaves the most exacting nothing more to be desired.

The latest Colonial tie has somewhat narrower toe than has been the prevailing fashion during the immediate past. These ties are made with one and one-half inch military or "steeple heels" or with one and three-fourth inch Louis heels. The making of these lasts and fitting the shoe over them is a delicate operation, requiring great expertness. The lasts are made with considerable fullness under the ball, so that when being worn the ball of the shoe, instead of the toe, will strike the pavement. The shank is high, so as to carry a high heel. These shoes are exceedingly attractive and when properly made are par-excellence. They are to be much used for out-door wear and lighter varieties of it are being made for indoor use. They are made of glazed kid, dull Dongola, patent or enameled leather. They have plain rounded toes, comparatively narrow, without tips.

Regarding the buckles, their name is legion. Of couse, there are the regulation oblong and oval brass and nickeled buckles to be used on patent or enameled leather ties; then a little variety is added by a plaited or twisted brass buckle, round or oval, with two fastening pins instead of one. The elegance of some flat oval brass buckles is further enhanced by rhinestone settings. The most elegant of all is the small oval gold buckle handsomely chased. Among the novelties is the gun metal buckle, which produces a handsome effect upon a Dongola or a Mat kid tie. Leather covered buckles are also used.

The greatest novelties, but not altogether the most tasty, perhaps, are the oval flat steel buckels, with black satin or red plush or velvet as a background, and used on bright red shoes. These ties are sometimes made with laces or buttons under the tongue, or have Colonial front with high tops fastened with buttons or laces. A Colonial tie of dull Dongola with black oxydized buckle, or buckle covered with dull kid is especially suitable for mourning. A patent or enamel leather tie with bow of velvet to match the gown, and heel covered with the same, the bow being topped off with jeweled gold buckle, has rather a "Frenchy" appearance. Another chic affair has a buckle with rhinestone setting and red leather Louis heels. For evening dress, ties are made of shades of Swede to match the gowns. These have gold or silver buckles, the most expensive having jeweled settings.

Almost as many varieties in footwear are shown for men as for women. For general street wear, the heavy calf shoe, with thick, rounded toe, extension edge and low broad heel continues in favor. For more dressy occasions, patent or enamel leather vamps, with glazed kid tops are used, and in summer, all glazed kid uppers in the high shoes, or Oxfords of glazed kid, patent or enameled leather are seen. Sportsmen's hunting boots are of heavy black or russet grain leather, laced to the knee; they have double soles, with extension edges. The correct shoe for golf is a high-cut laced shoe. It is supplied with a sensible heel and rubber discs attached to the sole to prevent slipping. It has a curved and pointed tip, which extends along the side of the shoe and is bordered with elaborate stitching. The equestrian's footwear is an important part of his apparel, and he gives it no little attention. He may wear top boots of patent or enameled leather, or of russet calf skin. These have stiff legs or have a few wrinkles just above the instep, where leg and foot join. Or he may wear "Tattersalls" or full length leather leggins strapped over a laced, button or Congress shoe, with plain medium toe minus a tip.

Box calf is a leather much used in men's shoes. It is so called because of the figure imprinted on the grain. The figure is made by boarding the grain with a hand board in the finishing; the skin is simply boarded two ways in opposite directions, which gives a figure resembling a box.

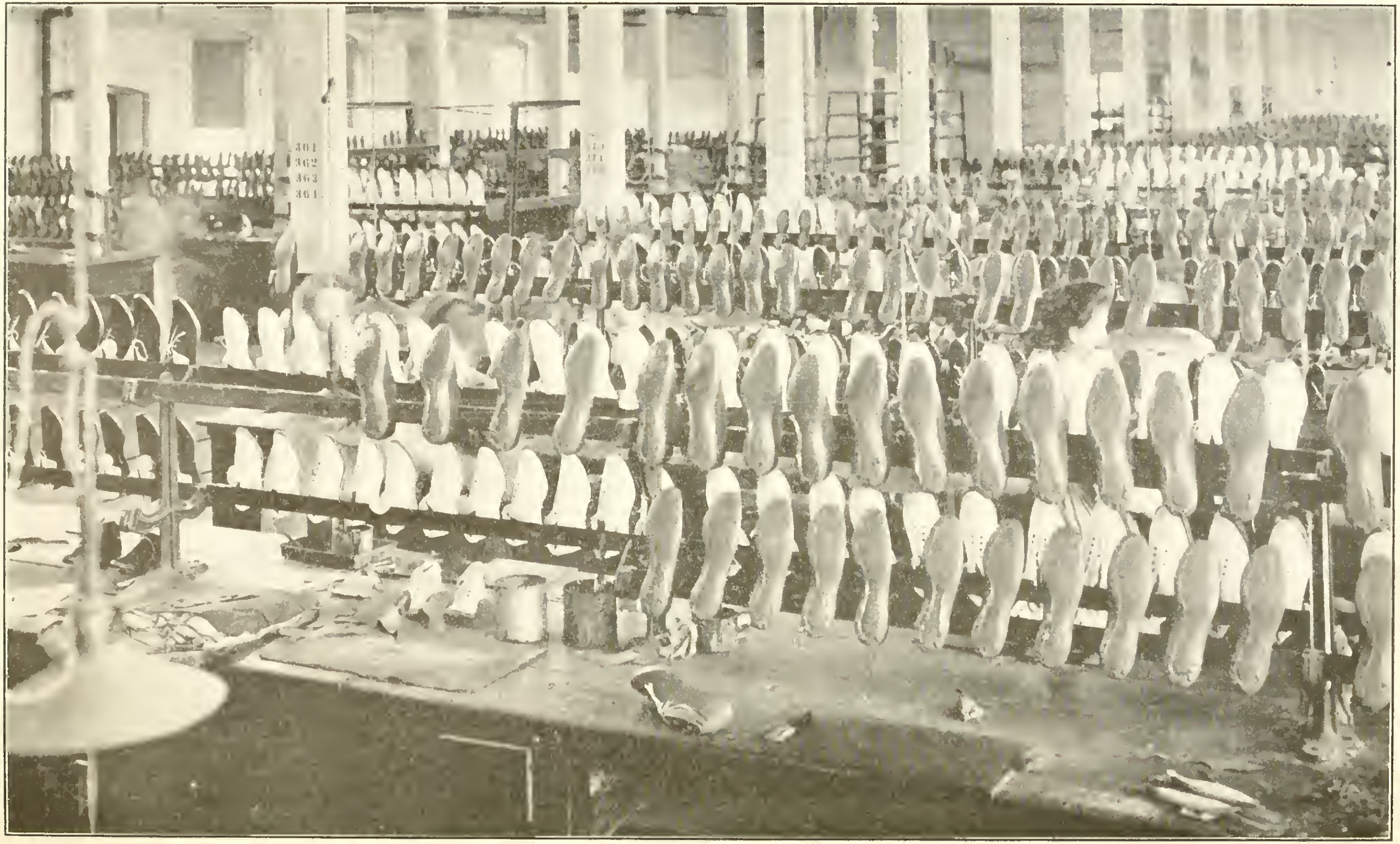
The wearing of boots by men for general use, has about disappeared in the cities. The swell of the present day, would look askance at the footgear of his predecessors of a half century ago. The dandy of that day regarded his boots as the most stunning part of his attire, and it was a source of much concern that they should be turned out by the fashionable bootmaker. The broad heel, tapering to the toe ,similar to ladies' slippers to-day, which were so stylish years ago would, cause a shudder of horror to men wearing the modish creations of the present.

One hundred years ago men of the better class wore low-cut shoes of stout calf skin. The heels were low and broad, the toes square and blunt. A huge buckle adorned the front.

In their way, children's and infant's shoes have received as much care and attention in their making as adults, and the contrast between shoes worn by children of the present and the little ones of long ago, is just as marked as that noticeable among shoes for their elders. Infants' and children's goods, in which the closest attention is paid to the smallest detail, are turned out in vast quantities all over this State, as well as other sections of the country. The clumsy appearance formerly seen in this class of goods is altogether avoided, while the ease and comfort so essential to children's feet is always kept in view.

As was the case with the parents' shoes, and perhaps even to a greater degree, children's shoes during the past generation were very crude compared with those made to-day.

A child's shoe made probably fifty years ago, was shown to the writer recently. It is a hand-made, laced shoe, of veal calf. The only seams in the shoe are one on either side of the vamp. The



SHOE ROOM—PROCESS OF MAKING RUBBER SHOES.

counter had been sewed in by hand and the sole was hand-pegged, with diminutive wooden pegs. In order to insure smoothness inside, an extra insole had been inserted and was held in place by a few pegs driven at intervals. The shoe was made on a straight last and had a broad bottom and spring heel.

Little tots now have moccasins, soft-soles and miniature bed-room slippers, exact counterparts of those worn by their elders. Little quilted velvet or silk "bootees" bound with fur or swan's down, "just like mama's" are decidedly cunning.

Taken all in all, the latest American shoe, whether it be for man, woman or child, is a masterpiece of shoemaking art and is rightfully ingratiating itself in the minds of the shoe-wearing population of the world. Civilization is traveling around the world in American-made shoes. The high character of the stock used, combined with the artistic finish and exhibition of taste in the American product, makes our footwear acceptable to all civilized peoples. Clearly in the contest for supremacy along these lines it is American ingenuity and skill against the world.

It is interesting to note just here that the increase in the output of boots and shoes in this country during the ten years ending in June, 1900, was $39,450,130, with a total product for the year of $260,189,488. This amount represents the product of factories and does not include custom work, which would increase the total to somewhere near the sum of three hundred millions of dollars.

The aggregate floor space occupied by the shoe factories of this country is practically 24,000,000 square feet, or about 550 acres. The total number of pairs of boots, shoes and slippers of all kinds produced in the factories of the country during the year amounted to 218,529,886 pairs, and after deducting something over 3,000,000 pairs which were exported, and basing the population of the country at 76,000,000, we get an average of a fraction less than three pairs consumed by each person.

The annual capacity of the combined factories of the United States, on a basis of 300 working days, is slightly under 4,000,000 pairs, showing that with all factories running at full capacity 300 days in the year, it would require not exceeding seven months to produce all shoes consumed in the country, including the exports for the year ending June, 1900.

It is gratifying to note that the export of shoes and leather, as shown by Government reports, is increasing rapidly. Figures showing the export of shoes since 1897 are as follows:

1897,	$1,708,224
1898,	1,816,538
1899,	2,711,385
1900,	4,276,656
11 months ending November, 1901,	5,580,874

While these figures showing increase in export business are very gratifying, yet the fact remains that had factories run full every day they could have produced in seventh months' time all the shoes consumed in this country, together with those exported for a whole year. But as the reports for the year 1901, without the final month, show that the exports during that year were greater than ever before, and as the domestic consumption has also increased to a great extent, it is reasonable to suppose that the trade is in a fairly prosperous condition, and that the progress made during the past decade will be equalled in the next ten years and the magnitude and importance of the industry greatly increased.

American shoe salesmen are now sent to the most remote parts of the world. India, Japan, China, Australia, New Zealand and South Africa are some of the countries being cultivated by direct solicitation and the increase in exports of boots and shoes to almost double during the past two years, gives unmistakable evidence that their labors are productive of good.

The Manufacture of Leather.

But how is the leather obtained, from which all this footwear is made, and from whence do the hides and skins come that are tanned into leather.

The art of tanning hides and converting them into leather by the use of tanning is as old as history, but the greatest progress in the are has been made during recent years. Leather is the oldest manufactured article mentioned in history, and, indeed, it antedates all records and traditions. Really, there seems to be no time in the history of this world when leather was not made.

Coming down the ages, it has always played an important part in the commerce of the world.

The first authentic record in human history regarding hides and leather dates back four thousand years. A mass of papyri was discovered near the pyramid of Usertesen 2d, at Illahun, about fifty miles above Cairo and one hundred and seventy-five miles above the mouth of the Nile. In these papyri among a series of temple archives and records of temple administration of the Twelfth Dynasty, about two thousand years before Christ, reference is made to leather and shoemaking.

The earliest mention of leather made in the Bible is 2d Kings, 1:8, "Girt with a girdle of leather about his loins."

In the most ancient ruins of Thebes, which were ruins in prehistoric times, pictures and inscriptions have been unearthed which prove that the ancient Egyptians tanned with the bark and pods of the acacia. These records also show some of the ancient tools and processes of making leather, as well as leather ropes, water sacks, shields, harps, etc., in use centuries before the Pharaohs ruled. Leather was also tanned by the early Aztecs.

Shakespeare says "A tanner will last for nine years—his hide is so tanned with his trade that he will keep out water a great while."

Tanning is the treatment of hides and skins with tannin or tannic acid, converting them into leather; in other words, the manufacture of leather In tanning proper, raw, salted and dried hides of cattle are treated with some form of tannin, either by itself or in connection with other agents. The product is called leather to distinguish it from white alum leather, kid, lambskin, etc., produced from the hides of goats, sheep and other small animals.

The treatment of hides is essentially a steeping or soaking in baths formed of extract or tannin. Some twenty or thirty species of bark, pods and berries are known to the craft as containing sufficient tannin for the purpose, and different nations use one or another of them. While a great number of plants yield tanning, the chief sources are the barks of green and white oak or pine; hemlock, birch and beech bark; the wood of Quebracho, Colorado; the powdered leaves and young shoots of the sumac. Nutgalls are also used, as they carry gallic acid with the tannic acid. In addition to the vegetable matters, various chemicals are also used in some tanneries. These include chestnut extracts, extracts of hemlock barks and myrabolams. Canaigre extract is being employed with much advantage in finishing hemlock sole leather. Most vegetable matters contain tannin in greater or less degree, and part with it readily. In Chili an extract of the bark of the "linge," a tree which resembles the oak is used. A new tanning material is taken from the roots of bushes called "tarra," found in Burmah and Assam. It ordinarily yields 33 per cent. of tanning matter. In recent experiments carried on in British India from 50 to 60 per cent. of tannin was extracted. It is claimed this new material is cheaper and better than Quebracho wood. Almost every country supplies some species of tanning extract. Wherever extensive forests cover the land, special industries are growing at their expense. Immense forests of sweet chestnut trees grow in Corsica and probably the most flourishing industry of the island is the extracting of tannic acid from these trees, about 20,000 tons of the wood being now required annually for the 4,000 tons of liquid extract sent away.

Quebracho, which is fast winning favor among American tanners, grows in the greatest abundance in the Argentine and in Paraguay. As an article of export it increases in importance yearly, because its value as an ingredient to mix with other tanning solutions is being more and more recognized. This wood is one of the hardest known, and its density exceeds that of ebony; therefore, tools of a special quality are necessary, and a considerable outlay for labor is entailed in its handling. Quebracho never rots; it can be used with equal success under water or in the ground, and the older it becomes the harder it gets. When needed for tanning purposes, it is cut in blocks five or six feet long and then sliced by a circular saw, into pieces three inches in thickness. These sections are placed in a machine wherein a steel plate studded with numerous teeth revolves with great rapidity, cutting up the Quebracho into a coarse saw dust, when it is then ready for the tanner's use.

The use of bark in tanning is as ancient as the art itself.

Tanners' bark is the bark of trees containing tannic acid, stripped and prepared for use. The bark is first rossed, which removes the outside shell. It is then ground fine in a bark grinder. The first mill for grinding bark for use in tanning was made in 1689. Tannic acid, or tannin, is a white substance, having a most astringent taste, without bitterness, and is very soluble in water.

It has been proven cheaper to transport hides to the bark region and locate tanneries there in the forest districts than to convey bark to the hide centers.

As is natural, the processes in tanning vary greatly among different nations and in different climates. Some methods are very crude, other comprise the highest uses of machinery, the more extended use of which early in the nineteenth century marks an epoch in the tanning industry. The old-time Saracens used alum in tanning; the American Indians used the brains of animals, preferably deer.

The Clamuck Tartars tan a waterproof leather from the skin of a sea carp, using sour milk and finishing in a dense smoke.

The Russians produce their peculiar yellow by the use of willow bark, finishing with birch-bark tan, and every Russian tanner has a close communion tannery whose secrets are jealously guarded.

The Laplander converts hides into leather by burying them in a corner of his tent or cabin until the hair becomes loose enough to remove. The unhaired hides are then soaked in a liquor made by boiling for half an hour small pieces of birch bark. On the second or third day the hides are placed in a fresh liquor, similarly prepared and then dried in the open air in the shade.

The preparation of hides and skins and their manufacture into leather is one of the oldest and most important branches of industry in Austria, and large tanneries are scattered throughout the empire, producing sole leather in great quantities.

Horse hide, especially, is tanned in Germany, as well as in Sweden, and heavy greased water proof leather for top boots, etc., is very skilfully tanned in Norway.

Although the tanning of a raw hide is a stictly chemical process, by which the gelatin and fibre of the skin, by the action of tannin, is compounded into leather, it is somewhat singular that chemistry has done so little for the process during all these years. It has pointed out a few new materials and suggested others, but beyond this nearly all valuable improvements have been in the direction of mechanically shortening the time. The hides are first freed from hair and are fleshed. They are then placed in leeches in a bath consisting of a solution of tannic acid and tanner's bark, the proper strength of the solution to obtain best results being determined by practical experience. The first modern improvement was a substitution of a tincture of the bark or "ooze" for the bark itself.

The great problem has always been to get rid of the "ooze" as fast as spent and fill the hide with fresh and strong. Simple as is the proposition, it is now almost as great a difficulty as at first, and almost all the patents have been discarded for the tanner's old friend and coadjutor, time.

It is a curious fact that some of the tools used by tanners and curriers to-day are similar to those which have been used for ages. It seems as though these appliances have escaped the advance of progress and the evolution of genius. To-day skins are soaked and limed and treated in many particulars with chrome tan, just as they have been in past years with sumac or combination tan.

After skins are removed from the tan liquor, a "slicker" is used for striking out water and shaping the skins. This implement resembles, in a sense, an old-fashioned round-cornered hand chopper, excepting that the blade is longer and the edge is flat. It has been used for that purpose from time immemorial.

When skins are removed from the lime, they are taken to the beam house, where they are unhaired and trimmed. The beam of to-day is identical with that which has been in use for decades, excepting that some beams are now covered with sheet metal.

Curriers' knives, used for taking dirt out of skins and for breaking and softening skins after soaking and also for unhairing, are the same to-day as they were when tanning first became a recognized industry. Staking machines, which are used after skins have been tanned, for pulling out and softening the leather to make it pliable, and to extract the seasoning prior to glazing, have not been changed during the past fifteen years at least. Some tanners use hand-stakes and others machine. The so-called hand-stake, requires the united work of hands and knee. The cost of this method is said to be one-third more than machine work.

Now with fleshing machines it is different. These have been so improved upon as to double their former capacity during the past ten years. Putting-out machines, which were invented fifteen or sixteen years ago, have made rapid strides in improvement. Although first made of wood they are now constructed of iron, and one machine will serve as substitute for three men—that is, in morocco work.

The chrome process, which is composed entirely of chemicals, gives insoluble fixation, but the assurance of good leather is mainly in the treatment of skins before and after the application of the chrome. The mechanical manipulation to which much attention is now given in the dressing of skins, cuts a very large figure in the production of a satisfactory article. Physical characteristics, such as flexability, tensile strength, color and durability, are more or less the result of processes which follow the chemical process and are included in the various operations of currying and dressing. Pains have been taken by successful tanners to keep pace with modern improvements in appliances of their craft, and in substituting machinery for hand labor wherever practicable. In making chrome leather, bichromate of potassa solution is used as a steep, the bichromate being by reaction with hyposulphate of soda, subsequently reduced in the tissue to sesquioxide of chronium. This is the process employed in the tanning of goat skins from which is made morocco leather or chrome kid, so popular to-day.

Morocco leather or glazed kid for many years had an uphill pull for equality with other leathers, and it was not until ten or twelve years ago that it gained supremacy over them, and leather for uppers for shoes have appeared and disappeared in this country in the following chronological order: First, it was Pebble and Brush kid, then Dongola, and finally morocco or glazed kid. The morocco or glazed kid industry is supposed to be one thousand years old, having originated with the Armenians, in Morocco, from which it derived its name. Its history in this country dates from about 1807. The industry at that time was an unimportant business, but there has been a gradual development to the present time.

In 1867 a Quaker City firm received the highest prize for Pebble and Brush kid leather at the Paris Exposition. This was the forerunner of the popularity that American leather achieved in France after that date, for we find the morocco men of that period turning their attention from Pebbled and Brush kid to something in the order of French kid, the popular leather of France at that period. The trade wanted something different, however, and experiments on a large scale began, which culminated in the production of Dongola. Then came the experiments in 1885 with tanning extracts, which resulted in the production of Glazed kid.

Enormous quantities of goatskins are consumed every year in the manufacture of leather for footwear. Almost every country on the globe contributing its quota. The best specimens came from South America, and are termed Brazils. Patna skins, from India, are more largely imported, perhaps, than any other variety, with the possible exception of Mochas, which came from Arabia, and the smallest number of skins come from the Rocky Mountain region of the United States, but the newly acquired territories, the West Indies and Manila, contribute to the supply of American goat skins. The United States, in some parts, is adapted to the propagation of goats; indeed, there is scarcely a state in the Union where some breeds of goats might not be raised advantageously, if properly cared for. Almost every region of the west and southwest possess the peculiar requisites for attaining the best results in raising Angora goats, and this breed is securing a foothold in these sections. Angoras are a cross between sheep and goats, and are covered with long hair. The mohair, or wool, is valuable for weaving braids, etc., and the flesh is said to be palatable and savory as food, and from South Africa are brought Natal goat skins, Capes, Angoras and Kaffirs. The many varieties of goats differ from each other in color and length of hair, and in shape of the horns. They seem to flourish, thrive and propagate freely in almost every climate, and many European countries possess more than one variety. In a state of nature the goat frequents the hills and mountainous places, being naturally adapted to rocks and dry soil, and has a decided preference for elevated situations. But it must not be supposed that it will not thrive in low lands. In some countries the goats run wild, while in others they are herded. In Russia, the peasants domesticate them for food; in Arabia, they are herded by shepherds, who raise them for their milk and flesh. Goats are quite prolific, breeding two or three times a year, and generally produce two or three kids in a litter. The Springbok of South Africa runs wild and has to be shot to be captured; shooting the animal, however, produces shot holes and spoils what would otherwise be an exceedingly fine skin.

In preparing the skins for the market great care has to be taken in curing, in order to prevent decay and infestation with bugs. Various preventative measures are used, different countries using different methods. The Patna skins of goats from Calcutta and India are cured with schluam, a native clay, containing quantities of lime. The lime acts as a disinfectant, destroys bugs and preserves the skins. The Chinese skins are cured with mud, while in Batavia, Dutch East Indies, arsenic is used.

Great improvement has been made in the curing process during the last ten or twelve years. The custom was to dip the goat skins in a vat of liquid poison and then hang them out to dry. This was a tedious process, and it took a long time to thoroughly dry the skins, and they could not be packed while damp. Moreover, the vats were not always available.

A preparation called napthalene is now used. It is a dry flake powder, and when it is sprinkled into the skins they may be baled at once. It saves labor and time, and does not injure the skins as liquid poison does. The Russians use napthalene.

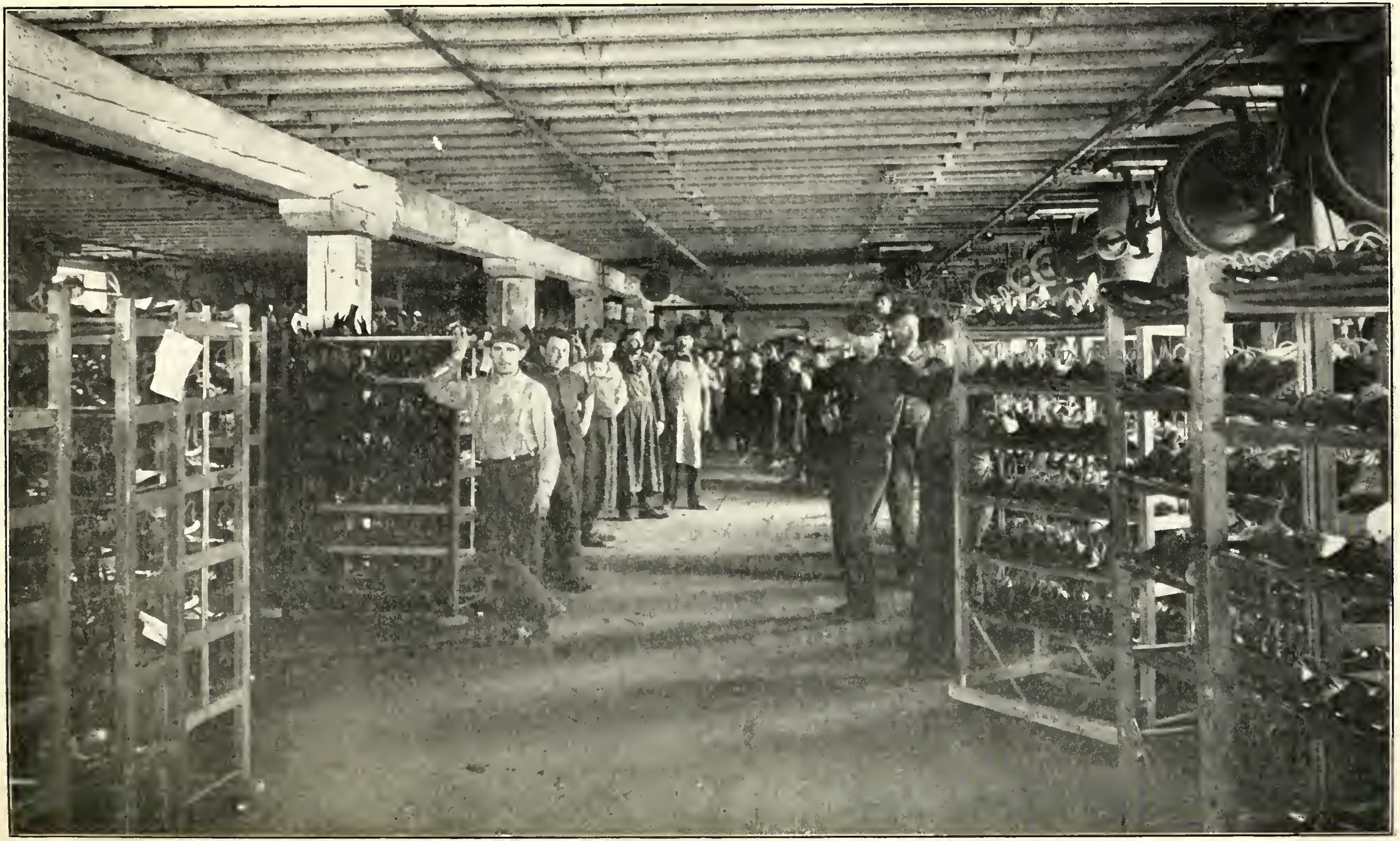
Countries differ in the manner of baling as well as of curing. The Indian skins are encased in jute bagging, the Arabians wrap them in matting and the Chinese roll their skins in burlap and confine them with iron bands. The other countries use rope to confine the bales. The heavy goat skins are used for making men's heavy glazed kid shoes, while from the lighter stock ladies' and children's shoes are manufactured.

Kangaroo skins are also used for making a superior qualtiy of patent and enameled leather, from which fine shoes for men and slippers for women are made. Kangaroo skins come from Austria and New Zealand, where the animals are found in great numbers and are hunted by men who make a business of it. The skins, which are dried and baled before being shipped, vary in size from three to ten square feet.

Giraffe hides which, in the mature animals, reach great thickness, are largely sought for by natives of equatorial countries, who fashion sandals, shields, whips, etc., from them. In Central Africa the hides of antelopes, harte-beests and zebras are made into leather for use in high-class bootmaking. Horse hides and colt skins are largely used for making enameled leather. Russia and South America are the greatest markets for horse hides and colt skins. Enameled leather is tanned in the usual way, except that it is put through a special process of grease extracting, and afterwards varnished with a specially prepared enamel.

Were authentic statistics available, they would show the quantities of hides of animals, cattle, goats, sheep, horses, kangaroos, etc., required to provide shoes for one year for the entire population of the earth to be enormous. Not a particle of goat skin or cow hide at the tanneries is wasted. Trimmings from the skins are carefully collected and used, with other refuse, in the manufacture of glue. The hair, which was formerly wasted, is now carefully accumulated, and forms an important factor in the commercial world, being used to pack horse collars and saddles, for mixing plaster, etc. Horns and hoofs are polished and either died out by buttonmakers or used for various little nick-nacks and fancy articles. Moreover, the excrement from morocco factories is valuable as fertilizer, good results having been obtained with it by trials recently made.

An enormous capital is invested in the leather industry in Pennsylvania. Philadelphia is the glazed kid producing city "par excellence" of the world. Many thousand of dozens are turned out daily. The production of morocco is so immense that it not only suffices for domestic needs, but there is considerable exported as



No. 4. Making-Room.

well. American chrome kid is rapidly and steadily supplanting foreign leathers, and is being shipped to England, France, Germany, South America and Australia.

It is interesting to note just here that the increase in the leather output of the country during the ten years ending in June, 1900, was $32,974,790, making a total product for the year ending June, 1900, of $204,038,127.

But when was the making of leather shoes first introduced as an industry into this country?

Shoe Manufacturing in Pennsylvania.

Shoe manufacturing in the New World has its origin in Massachusetts, and that trade has long been of recognized importance in the east. The first shoe factory in this country, located in Danvers, Mass., is said to be still standing. It is a one and a half story building, with an old-fashioned peaked roof, and was used as a residence as well as a factory. The industry was an important one in Massachusetts almost from the first settlement in the State. It started as a necessity, gradually developing as a leading industry. The business was conducted by the families of the sailors, who fished in summer and in the winter made shoes. All ages and both sexes were employed in the industry. The men took to their homes so many pairs of shoes to peg and their wives and families did the necessary sewing.

There were no regular factories, but the leather was taken from the manufacturers to the homes of the sailor or farmer and there turned into shoes. In the fall the manufacturer would go to New York and buy their sole leather and the whole village would be employed all winter making shoes.

While most of the sole leather was bought in New York, the majority of the upper leather was tanned near home, Salem and Peabody being great centers. The principal hides were from South America and were made into Wax and Kip stock. Hemlock bark was plentiful near home and the old-fashioned cog wheels and a stone were used. Some used horse power, some water power and a few steam. A vat was built in the ground, into which layers of tan bark and hides were placed. The time was noted and after a certain period the hides were taken out and split by the old hand method. They were then replaced in the vat, in order to tan the center sufficiently. Acres upon acres of land were used for the tanneries and the traces of many of the old vats are still said to be seen around Peabody.

The shoes made were heavy brogans, and boots for the southern trade. They were at that time pegged and in due course obtained a reputation for superiority of workmanship. The shoes were packed in barrels and shipped, some by sailing vessels and some over the turnpike roads to Baltimore.

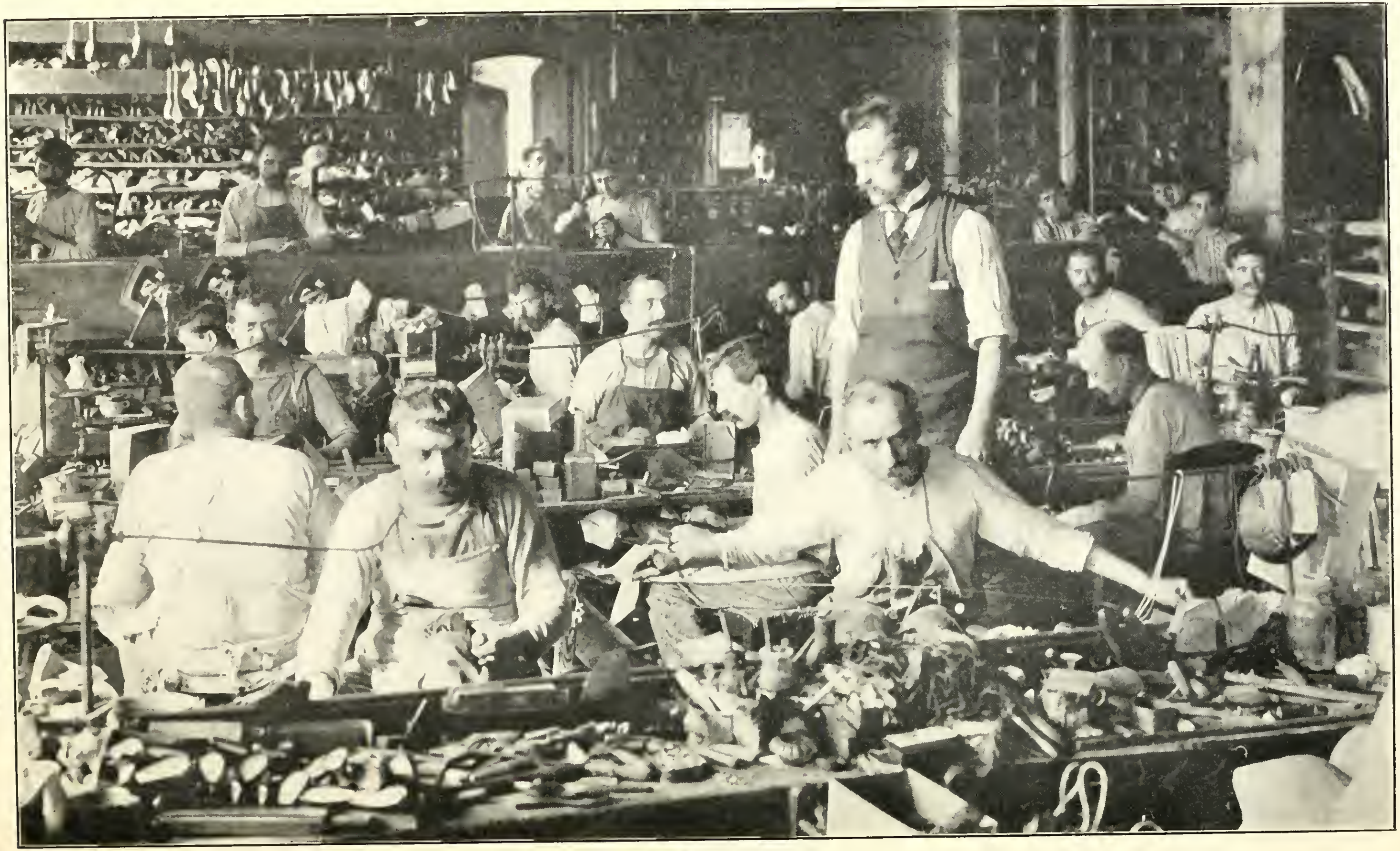
No special skill was developed until the settlement in Massachusetts in 1750 of a Welsh shoemaker named John Adam Dogyr. By superior workmanship he acquired great fame in the trade and materially improved the character of work in that region.

During the Revolutionary War, Massachusetts supplied great quantities of shoes for the army, but soon after its close, the business was seriously checked by importations. In Lynn, however, it revived so that, in 1788, its exports of various shoes were 100,000 pairs. In 1795, 200 master workmen, beside 600 journeymen and apprentices were employed there, and about 300,000 pairs of shoes were sent away, chiefly to southern markets.

The story of the rise of the Yankee shoemaker is an interesting feature of only Colonial development. A great race of shoemakers early sprang into existence in New England and in little more than a century, these hardy American pioneers were leading the world with rapid strides toward perfection in the art of shoemaking.

But what of our own State? Pennsylvania, as a state, is fast taking her place near the head of the column as a manufacturing center for footwear. In the whole record of industrial development during the past few years, there has been no feature more striking and significant than the progress of the shoemaking industry. In the matter of shoe factories there has been a notable increase during the past few years, and in no other section of the country is the business of producing footwear in a healthier condition than it is in Pennsylvania. With very few exceptions the factories have been running steadily for months past, and in many instances large additions to plants and extensive improvements have been made in the way of adding new machinery and otherwise extending and perfecting the facilities for production.

The growth of the industry during the past twenty-five years in Pennsylvania has been remarkable. A generation ago the Pennsylvania manufacturer who produced five hundred pairs of shoes a day would have been considered a marvel as "cock robin" shops, or very small factories in which shoemaking was carried on, on the most limited scale were the rule. The contrast presented between those days of limited output and present-day conditions is a striking one and reflects the utmost credit upon the Pennsylvania shoe manufacturers. When we consider the vast and splendidly equipped factories to be found in many parts of the State at the present time, with their output, in some cases, averaging from two to four thousand pairs per day, we obtain a realizing sense of the difficul-



No. 3. Hand Stitching.

ties it was necessary to overcome in order to place the manufacture of shoes in Pennsylvania upon its present plane. It required pluck, energy, foresight and business ability of the highest type to bring about the result, and it redounds to the credit of the Pennsylvania shoe manufacturers as a body that they have succeeded so admirably. True, many of the conditions environing the shoe manufacturers were favorable. They had at their very doors a vast territory thickly populated and settled for the most part with a class of people in fairly prosperous circumstances—people who, when they found that good footwear at moderate prices was being produced within the borders of their own State, did not hestitate to become liberal purchasers. A great number of retail shoe dealers are doing business in the State of Pennsylvania and combined with the sister State of New York the aggregate number of shoe retailers in both States is enormous. The Pennsylvania shoe manufacturer is thus enabled to dispose of his output at home and in immediately adjacent territory, and has the decided advantage of near-by freight rates and greatly lessened transportation expenses, which, in these days, when footwear prices are reduced to a minimum, means much. But taken all in all, the Pennsylvania manufacturer owes his prominence to-day to the fact that whether he operates on a large or small scale, his product is a good one, and will stand comparison with any. Adherence through the years, to a high standard in manufacture, and a fixed determination to give only solid value in his footwear has brought deserved success. Most lines made in the Keystone State have an individuality all their own, and wherever shown, the Pennsylvania shoe is invariably admitted to be an "honest shoe." If the ratio which the past few years has shown in the increasing number of factories is continued, Pennsylvania, as a shoe manufacturing State, will be among the first.

The greatly increasing number of employes, with the enlarged productive capacity of the factories, many of which are equipped with the most modern machinery, justifies the claim that the Keystone State is an important factor in this industry.

No one without personal observation and knowledge could believe that so many shoes of various kinds are made in small country towns scattered through the State. And all of them seem to be busy the year round, with comparatively little, if any, shut down Running all the time is obviously more profitable and economical than running part of the time at even a double production. The amount of rental is no more and other fixed expenses which might be enumerated, are the same whether the machinery runs all or only part of the time. In Pennsylvania, rents are reasonable, labor is plentiful at fair wages, and it is a well-known fact that natives of central Pennsylvania are not easily induced to strike or enter into labor troubles.

All kinds of shoes, from infant's kacks to men's brogans, lumbermen's and loggers' shoes, thigh boots and the like are made within her borders. She has always held an important place in the manufacture of army shoes. Pennsylvania manufacturers have supplied a very large percentage of the army shoes for several years past and are still making on Government contracts.

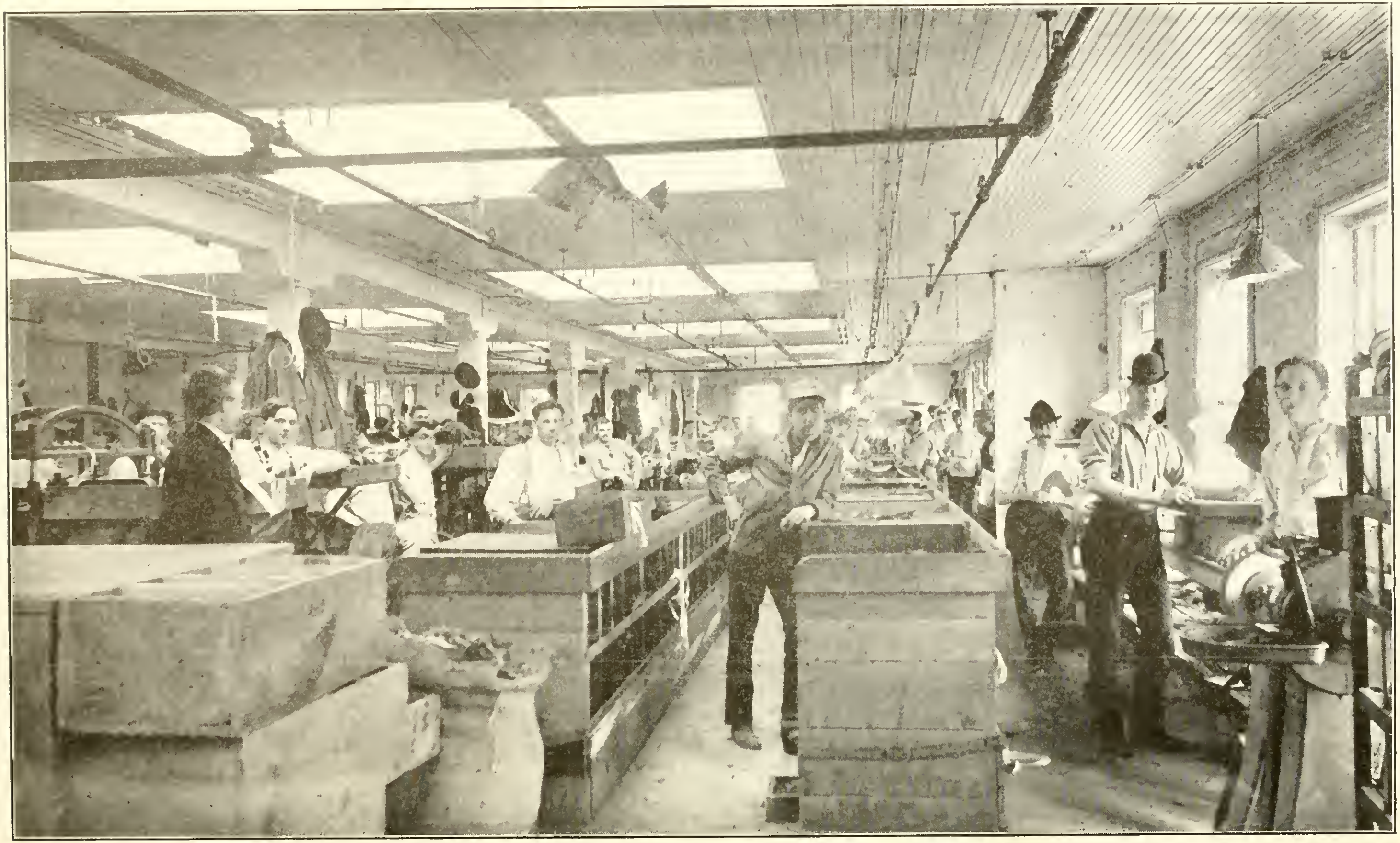
Women's, misses' and children's shoes form a considerable factor in this very important industry and the aggregate output of footwear from the Keystone State is enormous.

Years ago the cobbler shops supplied all the wants of the immediate neighborhood. When you wanted a pair of boots you had to go to the maker and have your measure taken; then, if he had no lasts of your size, he would make them. They made their own pegs by hands, and itinerant shoemakers went from house to house to make and repair shoes for the whole family. Subsequently, the trade was wrested from the neighborhood shoemaker, and the factory system began to grow and to fill the place of shoemaker shops of old.

Twenty-five years ago a traveler could travel mile after mile over this State without stopping at a shoe factory. Up to the year 1872, outside of Philadelphia, Allentown and Pittsburg there were few shoes made in the State except an inconsiderable number manufactured in small shops in Harrisburg, Huntingdon, York, Reading and Williamsport. Now, almost every town has its factory of greater or lesser dimensions and almost every week is chronicled the establishment of some new firm. Some factories manufacture in one plant, men's, boys' and youths' shoes; others manufacture womens', misses' and children's. The manufacture of infants' and children's turns forms an important branch of the State's industry. Formerly you could find factories making all kinds of shoes from a child's to men's heavy boots, and often men's high-legged boots. This same custom is noticeable in foreign factories to-day.

Now, however, in Pennsylvania, each factory has its specialty and every individual operator his special part, in which he becomes expert. It is attention to the very small matters that give high class factories the reputation they have of making nothing but the best, and it is this characteristic thoroughness which has given the Pennsylvania shoe its individuality and high standard of excellence.

A little more than half a century ago machine shoes were not thought of and a factory system was then a long way in the future. A shoe factory of sixty years ago was only a place for cutting



No. 1. Cutting Room.

uppers and soles, giving out the uppers to fit ready for the maker and the uppers and soles to be lasted.

About 1860 some manufacturers began making shoes by machinery. This was the transition period of shoemaking from hand work to machine work. Gradually hand-made goods were dropped and buildings for manufacturing shoes by machinery were erected. From crude beginnings arose the gigantic industrial establishments for the manufacture of footwear so numerous in the Keystone State to-day.

The production of certain kinds of shoes gravitated to certain localities. Operators became accustomed to making a certain kind of shoes, acquired dexterity and, of course, did better on that than on some other.

While some of our factories supply local demands, many have distant trade and the names of some of these manufacturers are familiar throughout the United States and their shoes are known all over the world.

The Building of a Shoe.

An interesting and instructive lesson may be learned by watching the manufacture of a shoe from the sorting of the stock to the final packing and shipping. In the perfectly equipped factory, containing all the modern and up-to-date mechanical appliances for shoemaking, and presided over by experts in their particular branches, each stage of the manufacturing occupies but a comparatively few minutes.

As shoe manufacturing methods are much alike in most factories a description of one will convey a fairly clear idea of the working of all.

The stock room is a very important department of a shoe factory. Here the stock is measured and re-sorted, the object being to select suitable stock to cut to the best advantage according to the characer of shoes desired.

The skins are then passed to the cutters, who dextrously cut with a sharp knife, with the aid of a pattern, the various parts of the upper. Care must be exercised to avoid waste and to not cut any damaged part of the skin into any part of a shoe. The patterns used by the cutters are of pasteboard, brass bound to prevent cutting away the edges. The cutters cut the vamp linings and vamps, the quarter, button fly, tips, foxing and the like, as well as stays, trimmings, top facings, etc., after which the linings are stamped by machine with case and size numbers.

Pattern making has become a fine art and to the skill of the pattern maker is attributed much of the success in creating attractive styles.

An ingenious machine folds over the edges of the upper in order to make a beaded edge and operators in the stitching or fitting room, where the inside and the outside of the shoe come together, put the various parts of the uppers together and attach the linings. Each operator has her special branch of the work; one sews in the facings, another the tips, another the button fly and still another stitches the vamp to the upper.

Cotton drills for linings are woven in the south and finished in Philadelphia. Bleaching is done largely in the east.

An eyeletting or punching machine punches the lace holes and sets the eyelets; a stud lacing machine sets the lacing studs or hooks. Shoe eyelets are made of brass by machines, whose operation is almost entirely automatic.

A button-hole machine, cuts button holes, works them and finishes the button-hole at one setting; a button sewing machine attaches the buttons to the uppers.

The button sewing machine is an ingenious labor saving contrivance. Buttons are placed in a hopper, and are automatically fed down a race way to the sewing device which attaches them to the shoe.

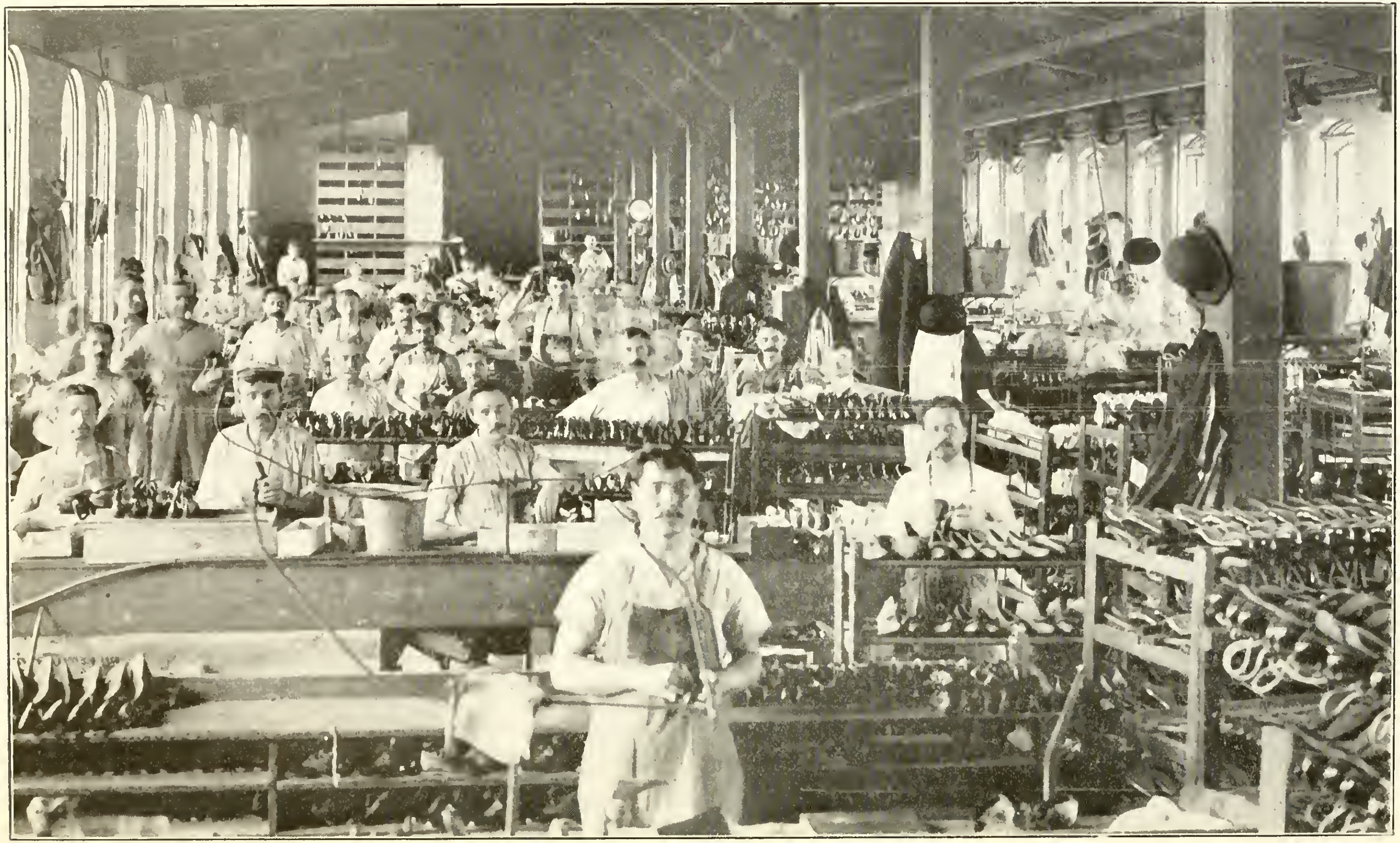
A barring or tacking machine tacks together the parts of the upper, holding them accurately in position while the vamp is being stitched. A lacing holds the shoe in proper position so that a standard measurement shall be maintained in a laced as well as in a buttoned shoe.

In the meanwhile the soles are being prepared to meet the uppers. Leather is brought into the stock room in sides or backs. It is first stripped in a stripping machine into the proper widths to allow for the length of sole it is desired to make. A "blocking out" machine blocks the strips with rapidly descending knives into pieces the desired size and shape for the soles. Dies are also used. Here all are sorted into different thicknesses and qualities and afterward selected to suit the special character of shoe being made; a splitting machine or sole evener makes then a uniform thickness. A rounding or sole cutting machine, cuts the sole in exact shape for the different shape of lasts or style of shoes desired.

The manufacturer of cutting dies, by the way, is an interesting process, although apparently simple to those engaged in the calling.

For McKay work, a channeling machine provides a channel on the grain side of the soles, enabling the sewer to put in the stitches and afterward to cover them up out of sight. At this point a slip-sole is added if one is required.

The soles are then moulded in a powerful moulding machine, which gives the sole the proper contour to fit the last. The channels are then opened and turned back out of the way of the sewing ma-



No. 2. Lasting Room.

chine. The inner soles are suitably prepared in a rounding machine, which cuts them the proper shape for the sole; the featheredging machine feathers the edge, putting it in proper condition so as not to cut the upper, and to make a neater appearance on the edges.

Soles for Goodyear welts, upon being taken from the blocker, are put into proper temper, selected and sorted and put through the sole-evening machine the same as those for McKay sewed work. Goodyear soles are channeled, but on the reverse side from that of the sole for the McKay. The leather stiffenings are cut out with dies of different sizes and shapes as required. A sciving machine scives them to the proper thickness, a moulding machine having produced the desired shape.

In preparing sole stock for turned shoes, soles are taken from blocking machine to the rounder, which rounds them up to the proper shape of the last. The sole is then tacked on to the last, flesh side up. The upper is placed on the last inside out and lasted, usually by hand. The Goodyear turn machine sews the sole to the upper. The last is then taken out of the shoe and the shoe turned right side out, the last being replaced. After being laced or buttoned, the shoe is properly dressed and leveled. From this point the turned shoe takes practically the same course of making and finishing as McKay or welt shoes.

Single thicknesses of leather are cut out the shape and styles desired for heels. This dieing may be done by hand or machine. The single pieces are assembled and put one on top of another until the desired height is attained; a machine, which compresses the heels under severe pressure, makes the heel solid.

The various parts forming the sole or bottom of the shoe meet the uppers at this juncture in the lasting department. Here the uppers are pulled over the last and the soles are put to them by the aid of a very ingenious and highly improved machine.

It may be interesting to note here that the manufacture of lasts has attainted great perfection. Of the thousand and one details entering into the art of shoemaking, be it of the daintiest slipper or the commonest brogan, there is nothing which can make or mar it more quickly or more decidedly than the last. Many other portions of the work may be slighted or of poor quality and still the goods will sell. On the other hand, be the material and workmanship of the best, a poorly-made and ill-fitting last will condemn the shoes beyond all possible hope. In preparing lasts, a model from which to turn the lasts is made. It is of wood and is nailed all along the edges with gimp tacks, to prevent rounding off at the edges. Sole patterns, in sizes and half sizes, are also made to fit the bottom of the lasts. A flat metal pattern from sizes are graded up and down on a machine for that purpose is cut and placed on the model.

Last blocks, which are made of hard persimmon or rock maple, thoroughly seasoned, are cut from logs and split. These are kiln or air dried, the former taking about six or eight weeks, the latter requiring several years to accomplish. Blocks are sawed the required length, allowing a couple sizes too long for a nubbin on each end, and then put on the lathe and turned according to the model. A frame moves forward and backward, slowly turning the block of wood, which is to be made into a last, according to the heights and depressions of the model and whirling knives carve the block in exact conformity with the model. After sawing off the "nubbins," a block is sawed out, taking instep and part of ball, so that this block may be removed when shoe is lasted. Lasts for McKay work have iron bottom plates; those for welts and turns generally have heel plates.

After being lasted, the McKay work is sewed—the soles to the upper—on the McKay sewing machine. The fair-stitch machine produces the stitching around the edge of the sole. The channel or cover being laid down, a leveling machine, working automatically, makes the outside or bottom of the shoe as well as the insole level or smooth.

After shoes are lasted on equally ingenious machines, as those used for McKay work, welt shoes are taken to welt stitching or inseaming machine which sews the insole upper and welt together, forming a seam practically the same as the hand method, but more regular and unvarying than hand work. In welt sewing, a thread passed through a heated wax pot; the welting is fed from a roll.

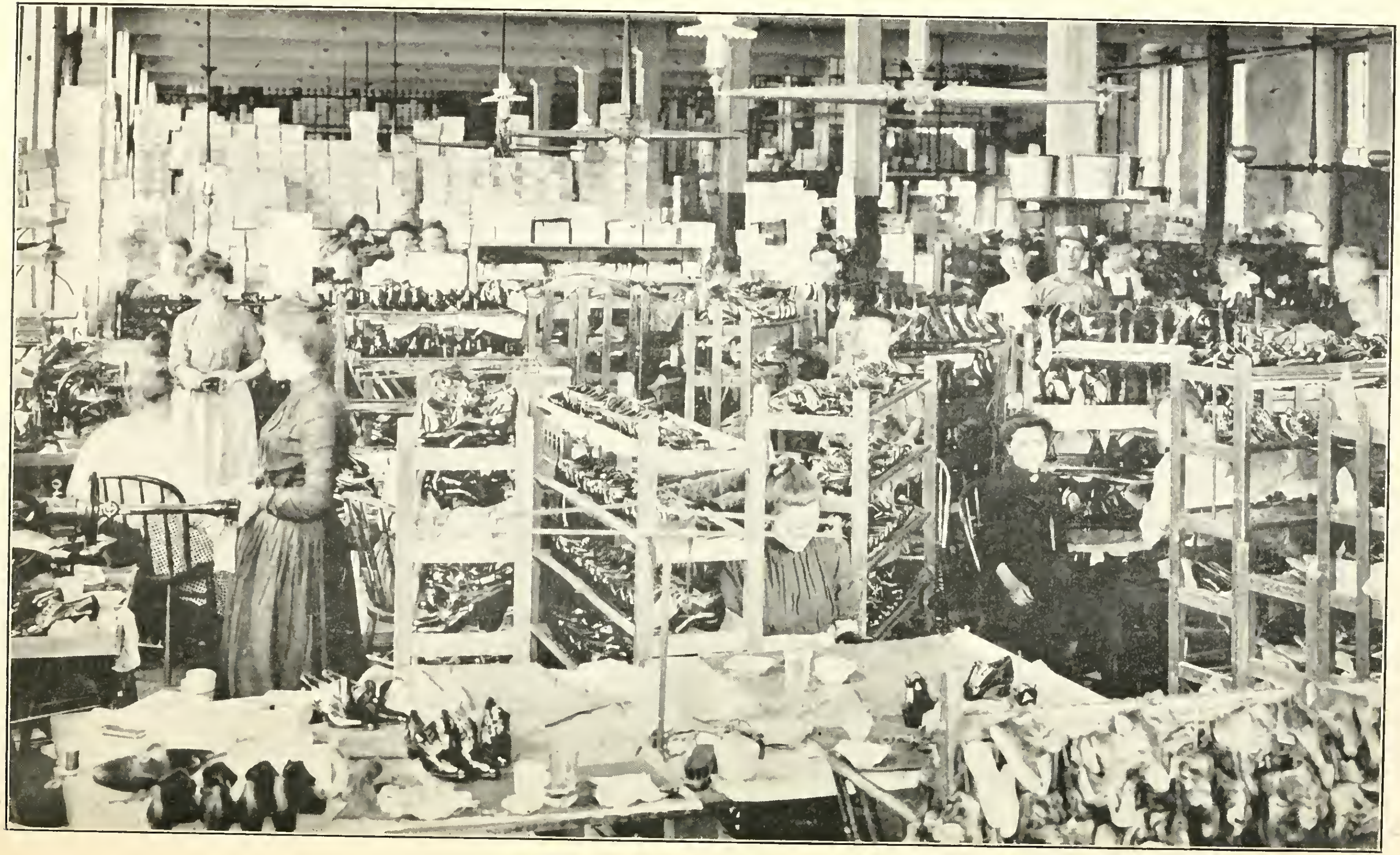
A history of the manufacture of threads used in shoemaking, makes an interesting story, but not altogether within the province of this article.

Welting is cut into long narrow strips from the length of a side of leather, after shoulders are cut off. It varies in width and in substance. The welt beater hammers the welt flat and close.

After the bottom filling has been inserted, soles are laid on and held there by adhesive cement, after which the rough rounding machine turns the sole to the shape of the last.

The channel opener opens the channel and turns it back, keeping it out of the way of the stitcher, which stitches the outersole to the welt forming the bottom of the shoe.

The leveling machine, working automatically, makes the bottoms perfectly smooth and to conform with the shape of the last, upon which shoe was made. One shoe is in press while another is being operated upon. A rolling pressure continues to roll over the shoe from heel to toe and again from toe to heel, until the last coming to the front stops automatically.



No. 5. Cleaning and Packing.

At this juncture both the McKay and the Goodyear welt shoes go to the heeler where heels are attached. The shoe, minus a heel, is inserted in heeling machine. One stroke of a row of pointed awls drills the holes, the second sets the nails, the third fixes the top pieces on ends of nails sticking up.

A breasting machine cuts down the breast of the heel and a heel trimmer forms the heel into proper shape to suit the prevailing fads and fancies. The sand-papering machine smooths up the heel ready for the blacking. The stitch separator makes the milling around the edge of the sole and trimmer turns up the edges, which are then blackened or put in color. An edge setter afterward sets or burnishes the edges. The heel finishing machine polishes and finishes the heel, another machine sandpapers or smooths off the surface of sole and top of heel. A final sandpapering enables bottom finisher to stain and finish the bottom in various styles and shades, as may be required.

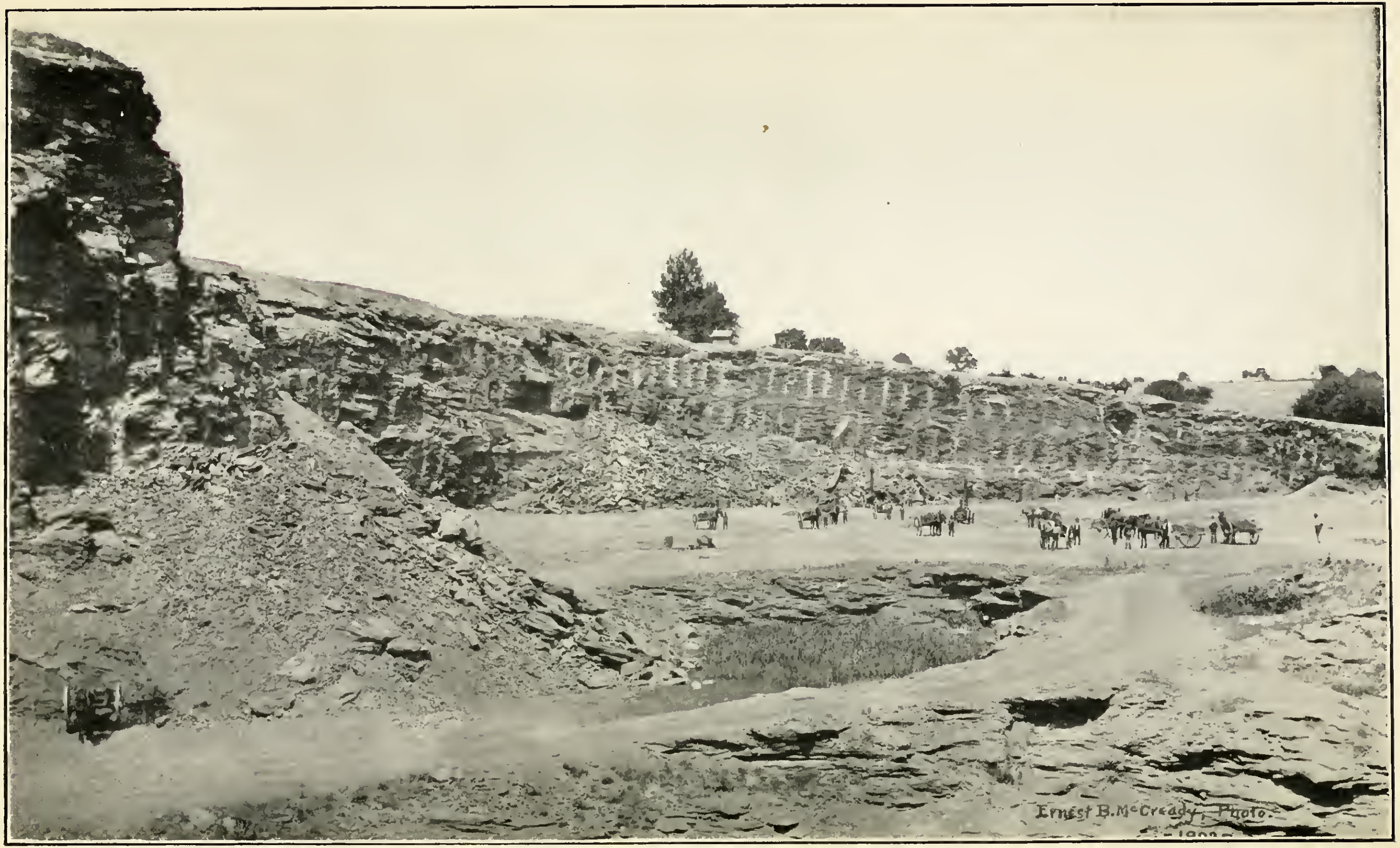
After a final cleaning to remove all stains and finger marks, the shoe is treed and the upper treated by ironing process, which restores stock to its original lustre. Shoes are then matched up and mated, and after being finally laced or buttoned they are packed in cartoons ready for the market.

In passing, it might be interesting to note that shoe laces are made not only in enormous numbers, but also in great variety. There are factories devoted solely to their production. Laces are made principally of cotton, but also of calfskin, porpoise hide, silk and mohair. In shape shoe laces are made in a solid round braid, of cord twisted like a rope, or flat braid and of tubular braid. These are all made in various styles and lengths. In colors they are made to match the various shades of leather used in shoes. Many laces are made with the metal tips of the kind that are clamped on, others have spiral wire tips. Formerly many millions of laces annually consumed in this country were imported, chiefly from Germany; the importation of shoe strings now, however, has practically ceased.

The manufacture of paper shoe cartoons has become an important industry too, and presents a very interesting spectacle to an observer who watches the construction through the various stages, but paper box manufacturing is another story.

And thus finishes the story of the shoe, from its earliest inception to the present day. It may readily be seen that the building of a shoe entails a vast amount of detail, numerous hands and quantities of machinery. Every portion must be accurate and correct in order to insure a perfect whole, and while some branches of the manufacture are trades in themselves, every part is connected with every other part and is co-existent with it.

—*Contributed by Charles Warren Summerfield.*



Ernest B. McCready, Photo.

A TYPICAL PENNSYLVANIA CEMENT QUARRY.

Portland and Other Cements.*

Mineral resources have fixed Pennsylvania's position with reference to the other Commonwealths forming our greater country. Coal, iron, steel, limestone and clays are among the principal elements of industry growing from the wealth which God has concealed in the hills and valleys of our great State.

Within the past decade another industry has been making giant strides in this country, but more especially in our own State. This is the production of Portland cement, which for many years had been considered an exotic plant and one incapable of establishment in the United States. This industry, which owes its successful development to the perseverance, patience and energy of a Pennsylvanian, finds its principal habitation and source in the State of Pennsylvania, and more than one-half of the total amount produced in the United States last year of this important building material was produced within the confines of this Commonwealth. In writing, therefore, of the growth, development and future of the Portland cement industry in the United States, it is impossible to write it without reference to what has been done in our own State, for the growth of the American manufacture is synonymous with that of Pennsylvania.

History.—From the earliest days of the ancients the desirability of a cementitious material that would set under water was recognized, and in the books of Vitruvius, who wrote of the structural material of the ancients, much stress is laid on the necessity in some of his coffer-dam constructions of allowing the material in the coffer-dam to remain exposed for at least two months, in order that the cementing material used in his foundations might have time to set. This difficulty was one that was met by him, as well as by many of the other builders of that time, and goes to show that what is known at this time as "Roman" cement, and what we, of this period, are prone to talk of as the all-enduring "Roman cement," was not a cement at all, but merely a mixture of lime and argillaceous material, which, after considerable time, set under water.

The mortars of the ancients which we find to-day still standing are mostly mortars which have been used in air, and by analysis are shown to have been formed of combinations of slaked lime and powders made by crushing and pounding up the volcanic deposits found in the vicinity of Naples and other points in Southern Italy. These mortars, by reason of the silicious character of the volcanic sand used, had the power of ultimately hardening under water, and the mortar which we see at this day and which seems to have such great strength, was nothing but a form of our old lime mortar, but made with a material a little more suitable in character than the sharp sand we use at this day.

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* Pennsylvania Production for 1901, will be found on the closing pages of this book.

Pliny, also, in describing in one of his works some of the buildings he ran across in olden Rome, finds cases where the walls of the city had fallen and which he says were frequently composed of lime lacking in adhesiveness. His experience only corroborates that of Vitruvius, and shows that the ancient Romans, notwithstanding all the credit we give their Roman cement, really were no better off than those who, in the early part of this century, were using lime mortar as the safest and only material for the binding together of brick and stone.

From the time of the Romans away down until the end of the fifteenth century, there was little improvement in the making of mortar for building purposes, and it was a recognized thing in most of the structural work of the middle ages, that a stone and brick construction had to be gone over every few years and repointed with new mortar, and chimneys had constantly to be rebuilt. At the end of that century a petition was presented to the then King of France by a builder, who claimed he had discovered a method of making good mortar, and what he claims to have found was that in all the years gone by, the blunder had been made of allowing the sand and lime to slake together for months at a time in open pits in order that there should be a homogeneous mixture, whereas the real way was to take the lime hot from the kiln and then incorporate with it sand and water. This discovery, however, was but a "flash in the pan," and nothing came of it. In consequence, the history of binding material for structural work remains almost a closed book until we come to about the beginning of the nineteenth century, when the first real progress in the direction of finding a good mortar was made.

To Smeaton, the constructor of the Eddystone light house, is due the credit of the discovery of hydraulic mortars. His problem was the construction of foundations under water in a difficult place, and it was imperative that mortar to set under water should be had. Out of this necessity grew the first introduction of hydraulic cement or hydraulic limestone mortar. In the course of his work he made a number of experiments in the way of burning various limestones for the purpose of procuring lime for his construction, and the result of these tests showed that the theories of the ancients were incorrect, and that the burning of the hard limestones did not give the hardest mortar, as they had supposed. He discovered that the softer limestones, namely, those limestones which contained by analysis, a fair amount of argillaceous substances or clay, would give excellent results in hydraulic construction, and he laid down, as a result of his discovery, the principle that a limestone yielding one-fifth to one-fourth per cent. residue when dissolved in hydrochloric acid, would set under water. To these limestones he gave the definition of hydraulic limestones, and from the principle laid down by him come the two great definitions of what we know as the "natural" and the "artificial," or "Portland" cement of commerce.

While Smeaton had discovered the scientific application of the principle, he reaped no financial reward and it remained for James Parker, of Christ Church, Surrey county, England, to invent and patent a cement in 1796. To this cement he gave the name of Roman cement, claiming it to be the same material as the Romans used. His material was prepared from argillaceous limestone pebbles found in the septaria on the Island of Heppy, Whitstable and Harwich, in England, and he put the article on the market in quite an extensive way. Investigations were going on in France about the same period. Experiments were made under the auspices of government engineers at Metz, Viviers and Nismes, France, with the puzzolan of Italy and the tarras of Germany, and also with well-burned tiles ground to powder, for the production, by the addition of lime, of hydraulic mortar, and in 1812 Vicat, one of the leading engineers in France, started his investigations towards the formulation of a doctrine of calcareous cements, and in collaboration with Messrs. John and Berthier and M. Bruyere, Inspector General of Roads and Bridges, Messrs. Avril and Girard de Caudemberg and Lacordaire, succeeding in arriving at the secret of the production of hydraulic mortar, and actually in an experimental way produced an artificial cement similar to the present Portland cement of commerce.

Concurrent with these scientific researches in France, General Pasley, the leading English engineer, was working in the same direction and discovered in that country the value of burning a mixture of lime and clay to a point of incipient vitrifaction, but it remained for another than the scientific engineer to succeed on the commercial side of the subject in manufacturing a commercial product.

This was done in 1813 by Jos. Aspdin, a bricklayer of Leeds, England, who took out a patent, which is as follows:

"My method of making a cement or artificial stone for stuccoing buildings, water works, cisterns, or any other purpose to which it may be applicable (and which I call Portland cement) is as follows: I take a specified quantity of limestone, such as that generally used for making or repairing roads, after it is reduced to a puddle or powder; but if I cannot procure a sufficient quantity of the above from the roads, I obtain the limestone itself, and I cause the puddle or powder, or the limestone, as the case may be, to be calcined. I then take a specific quantity of argillaceous earth or clay and mix them with water to a state approaching impalpable, either by manual (sic) labour or machinery. After this proceeding I put the above mixture into a slip pan for evaporation by the heat or by the sun or by submitting it to the action of fire or steam conveyed in flues or pipes under or near the pan, until the water is entirely evaporated. Then I break the said mixture into suitable lumps and calcine it then in a furnace similar to a lime kiln, till the carbonic acid is entirely expelled. The mixture so calcined is to be ground, beat or rolled to a fine powder and is then in a fit state for making cement or artificial stone. This powder is to be mixed with a sufficient quantity of water to bring it into the consistency of mortar and thus applied to the purpose wanted."

This product he called Portland cement because of its resemblance when set to Portland stone, a well-known building stone of England, and he produced it in a small way in competition with the Roman cement, or Parker's cement, which was then ruling the English market.

He was followed in 1825 by James Frost, a builder of Finchley, who established a cement works at Swanscombe, Kent, which is now the site of one of the principal cement works in England.

In 1847, according to General Pasley's book, there were three Portland cement works then in existence, though in that book Aspdin's Wakefield factory is omitted. By 1843 the competition between the Roman cement made under Parker's process and the Portland cement made under Aspdin's process was very close and many experiments were made to determine which of the two was the better, and as the concensus of opinion at that time was rather in favor of the Roman cement, and as railroad building was at its height in England, Sir Robert Peel, fearing an exhaustion of the septaria out of which Roman cement was made, proposed putting a tax upon it, and it was only upon the assurance of Mr. Aspdin that if the supply of stone failed from which the Roman cement was made, that he could offer an equally good material, that the proposed legislation was abandoned.

The London Exhibition of 1851 again gave occasion for competition between the two grades of cement and it was there that briquettes, or test pieces for determining the strength of cement, first made their appearance. It was a few years later, however, that the actual determination of the value of Portland cement, as contrasted with natural cement, was finally settled by John Grant, the engineer who had charge of the construction of the London drainage works, and in his two papers published by the British Institute of Civil Engineers, and which formed the first literature on the scientific side of cement testing, he showed conclusively that Portland cement with three parts sand, was practically as strong as Roman cement with one part of sand, and this put Portland cement to the front as a material upon which engineers could rely to the fullest extent.

The commercial introduction of Portland cement in England was soon followed by works in Belguim, Germany and France, many of them being established by associates or relatives of Aspdin and Parker, so that in a very few years after the publication of Grant's paper, the Portland cement industry became a well recognized one, not only in England, but also in the countries of the continent.

In this country the cement industry is contemporaneous with the establishment of the earliest waterways. After the original pioneer had opened roads and in a primitive way had built bridges over the small streams and creeks, commerce required more approved methods of inter-communication for the transportation of heavy freight. This led to the great canal systems, which were the first methods for inter-communication between the Great West and the seaboard. The building of aqueducts, locks and dams for these public works required hydraulic mortars, or cements, and in many of the places where this construction had to be done, limestones were discovered which tested according to the theories of Vicat, Smeaton and Paizley and develop the hydraulic qualities necessary for use in construction under water and were made into natural hydraulic cement. Thus it was that in this country as in England, the natural cement industry preceded the development of the Portland cement industry.

It was in the early part of the nineteenth century that these discoveries were made and between the years 1830 and 1860, cement works were established on the line of the Richmond and Allegheny canal at Balcony Falls—on the Ohio River canal at Louisville, Ky.—on the Chesapeake and Ohio canal at Cumberland and Hancock, Md.; on the Erie canal at Howe's Cave—on the line of the Lehigh canal at Siegfried's Bridge, Pa., on the line of the canal system of the Hudson river, at Rondout, and on the line of the Welland canal, at St. Catharines, Canada.

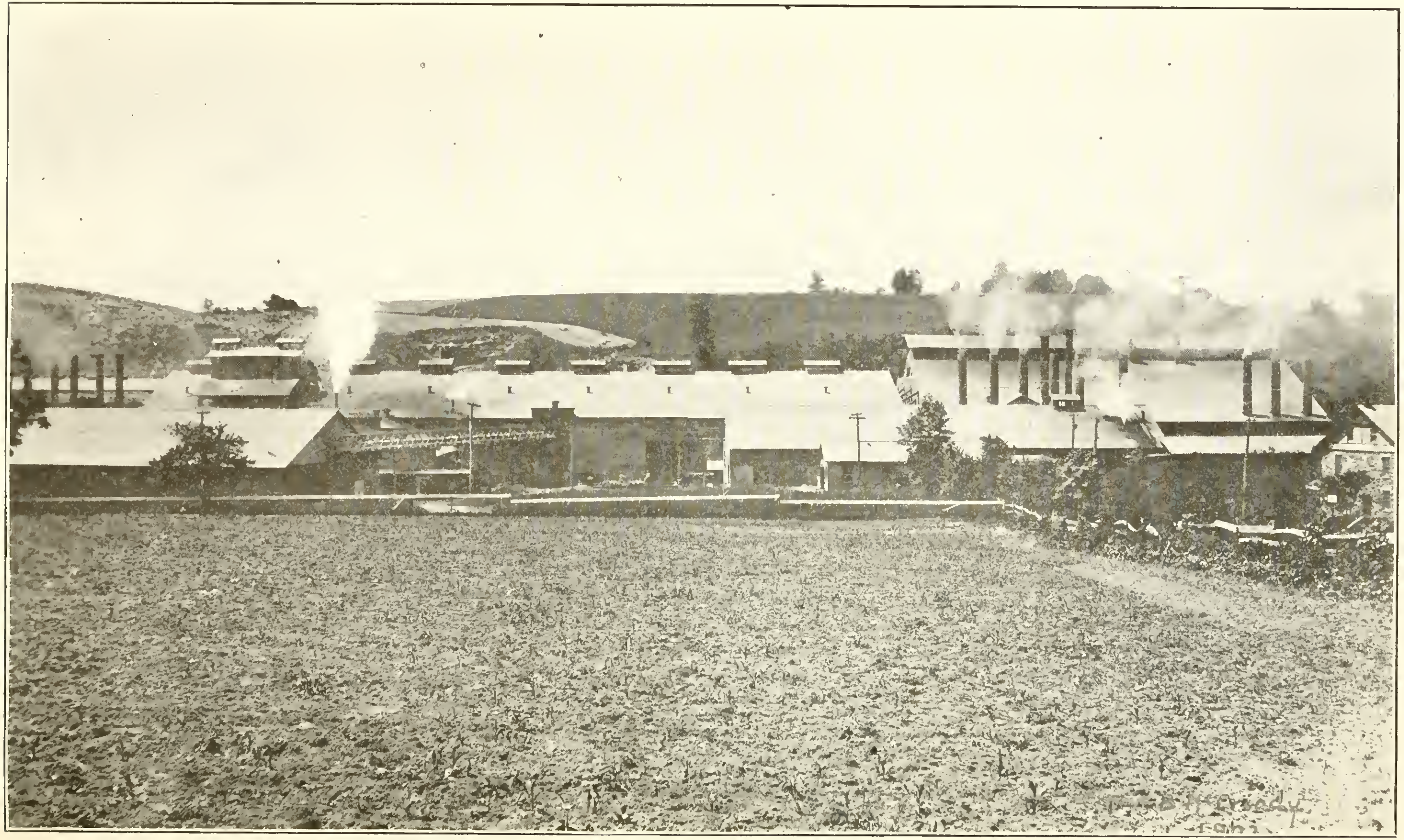
While this development of the natural cement industry was going on in this country, and large amounts were being made and material of an excellent quality was being turned out, the natural rock cement of England, as has already been stated, was giving way to the artificial Portland cement. These Portland cements were imported into this country in a very small way in the year 1870, and by reason of their great strength, as well as their adaptability to paving and other important work, their sale began to grow in extent, and American manufacturers and others interested in the development of the natural cement industry commenced to look into the reason why this artificial Portland cement could not be produced in their own country.

Practically the first of these was Mr. David O. Saylor, of Allentown, Pa., who was operating in the early '70's a small natural cement works along the line of the Lehigh canal at Coplay, Lehigh county, Pa., and his early experiences are most interesting. He ascertained, by experimenting, that by burning to incipient vitrification the natural rocks in his quarry, he could make a cement which, at short periods, showed tensile strains equal to the imported Portland cement. He found, however, that this cement, when it was left for a time in briquettes or in work, would crumble away and that this was due to the variation in the raw material of the rocks which he used. By sheer force of his native ability, Mr. Saylor studied out and successfully applied to the Lehigh rocks the principle that had governed the production of Portland cement in Europe, though he was dealing with a material never before used for the purpose.

He found that it was necessary to grind the raw rocks together to produce a material of uniform analysis, and then that it was necessary to make these rocks into bricks or blocks of homogenous character before placing them in the kilns for calcination. This process is still used in some of the largest works in the Lehigh district.

Mr. Saylor's work was materially aided by Mr. John W. Eckert, graduate of the Lehigh University, who became first the chemist and afterwards the superintendent of the Coplay Cement Company, Mr. Saylor's concern at Coplay Station, which he subsequently left to join in the establishment of the American Cement Company, which had been established by Mr. Robert W. Lesley, who had also been connected with Mr. Saylor.

While this experiment was being carried on to success in the Lehigh region, and the foundations were being laid for the large industry that now exists, a small works was erected near Kalamazoo, Mich., in 1872. Owing to the character of the material and the high cost of labor and fuel, this works made cement which was too expensive commercially and did not succeed. Early in 1875, works were started by Mr. W. P. Shinn, in Lawrence county, Pa., at Wampum, using limestone and clay. These works, now owned by the National Cement Company, are being re-built with a largely increased



A REPRESENTATIVE PENNSYLVANIA CEMENT WORKS.

capacity. At South Bend, Ind., Thomas Millen, an Englishman, found a white marl and blue clay which resembled, in composition though not quite in form, the materials used for cement making in England. He started a small works there in 1877, and the plant is still running, though in a moderate way. Mr. Millen later transferred his field of operations to New York State, where he has large works. The Rockland, Me., lime is well known as one of the best and purest in the country, and it was but natural that the Portland cement industry should seek a lodgment in that field. The Cobb Lime Company, an important concern, there started works in 1879, but the product was too dear for commercial success and they were closed down. For similar causes a like fate overtook the National Cement Company, which was established by Mr. S. D. Coykendall and others on the Hudson, in the well-known natural Rosendale natural cement district. Thus, it may be seen that out of six original works started in this country prior to 1881, three were failures and certainly the industry, with this percentage of loss, did not offer very encouraging outlook to the investor. At this period, the foreign Portland cement had the market exclusively, and there seemed little likelihood of growth for the American industry.

Patents were necessary to enlist capital in the early enterprises and many of the earlier works were founded on them. The great difficulty in all the American enterprises seemed to be the cost of getting the raw material into powder, then into paste, then into bricks or blocks and then into the kiln with a sufficient economy. About 1884 and 1885 patents were taken out by Messrs. James M. Willcox, E. J. DeSmedt and Robert W. Lesley for the purpose of mixing liquid hydro-carbons with the paste. In this way "a slurry" was made, which, when compressed into balls or eggs could be at once put into the kiln, and thus many of the intermediate steps of drying, etc., were dispensed with, and much labor and money saved. These processes, which were used in the works started by the American Cement Company, at Egypt, Lehigh county, Pa., were based upon the use of the by-products of the manufacture of coal gas, but with the introduction of water gas and the consequent advance in the price of coal tar, the processes were abandoned and other methods adopted. While these methods of saving the intermediate process of drying were being used, other inventions by Mathey, Navarro and Ransome in the same direction gave rise to the establishment of the Atlas Portland Cement Company, which has two large works in the Lehigh region and is another large producer of cement. These processes, based originally on the calcination of the crushed raw rock by oil in revolving kilns, were first unsuccessful, the cement proving unreliable for the same reason that gave Saylor so much trouble originally. Subsequently, however, improvements were made whereby the material was ground to an impalpable powder and slightly moistened before being run through the kiln. This method has proven wonderfully successful and to-day is at the bottom of the wonderful growth of the American Portland cement industry.

Natural and Portland Cements.

In order that a thorough idea may be had of the cement industry, it is necessary to give some description of the difference between natural and Portland cement, and as to the methods of manufacture and the materials used. Natural cement, as has already been stated, was the first of the hydraulic materials discovered. Broadly speaking, natural cement is made from an argillaceous limestone, which is found in either crystalline or laminated form, and which, when calcined, contains from 40 to 55 per cent. of lime and lime and magnesia, and from 45 to 60 per cent. of argillaceous material, silica, alumina and iron oxide. These limestones, as above stated, are found in many points in the United States, and cement is made from them by calcining them in open kilns, similar to the well-known lime kilns. The cement rock and coal are put in the kiln in alternate layers, and the burned material is drawn from the kiln, while additional material is added at the top and the process might be described as the calcination of argillaceous limestones in continuous kilns at low temperatures. The effect of the burning is to drive out the carbonic acid gas and the moisture, and the material after calcination is taken to crushers, and after it runs through these, is carried to millstones or other form of grinding apparatus, which pulverizes it to infinite fineness. It is then ready for the market.

Natural cement, as can be seen by the above operation, is subject to a number of variations uncontrollable by the manufacturer.

1st. It is made from a rock which may vary from day to day in its constant ingredients.

2d. It may contain more or less moisture.

3d. Its calcination in open kilns is dependent upon the whims of the weather, and

4th. The low temperature at which it is burned does not produce an absolute chemical coming together or combination of all the various ingredients. Therefore, it gets the name of "natural" cement, and may be said to be very safe and sound building material, produced in the best possible way out of a natural material containing the ingredients which nearly approach the standard of the artificial cement, but which are not exposed to that degree of heat which would bring all the ingredients into close chemical union and activity, especially as the rock is taken in this case just as it comes from the quarry, and there is no attempt to break down its structure or to produce a homogeneous material for calcination, other than the natural rock that God has put in the quarry.

Portland cement is essentially an artificial product. It began with the combination of the chalks and clays of England, which were mixed in the proper proportions to produce, when calcined, the highest grade of Portland cement, and which ran, in the elements of its production, through the whole gamut of all the calcareous substances combined with argillaceous substances. This Portland cement can be produced by properly proportioning limestones, argillaceous limestones, marls and clays, with argillaceous limestones and forms of clays. The basic principle being that the combined material shall, after calcination, analyze from 55 to 65 per cent. in lime, and the balance of silica, alumina and oxide of iron. The further all-important element is, that all these materials shall be broken down into the finest form of powder, so that all the calcareous elements may find equal finely ground argillaceous elements, whereupon to combine and form silicates and aluminates of lime in the chemical crucible of the kiln.

Chemical analysis, as may be seen above, the raw materials for Portland cement embrace a very large field of selection, and success in the manufacture can only be obtained by the closest watchfulness and care, not only in the selection of the materials, but in a chemical analysis.

The first American manufacturers were met by the objection that the raw materials of this country were not similar to those of Europe, and that no good Portland cement could be produced from what nature afforded here, and in the early days it was very difficult to overcome this objection, which was a very proper one in view of the extremely large works on which Portland cement is used and the relative small cost of the mortar to the cost of the works themselves. In view, however, of the fact that the analysis of the raw materials of Portland cement is based, first upon the analysis of the materials themselves and finally for the practical purpose of manufacture to the analysis of the slurry or composition, and that this latter element can be kept constant within fairly reasonable limits, the actual character of the ingredients out of which the slurry or composition is made, providing, when mixed together, they provide in the slurry a material of the proper chemical analysis and of the proper texture—is not so important as it was first thought to have been, and the result of tests of the first

American Portland cements soon overcame the objections that were urged against them on the ground of a lack of proper materials in this country.

The exact chemical composition of a commercial Portland cement varies considerably. The principal constituents are silica, alumina, oxide of iron and lime, which, generally speaking, are found in the manufactured product in, roughly, the following proportions:

Lime, 60 to 64 per cent.
Silica, 20 to 24 per cent.
Alumina, 6 to 10 per cent.
Iron oxide, 3 to 5 per cent.

These four constituents, as a rule, amount together to about 96 per cent., the remainder consisting of small quantities of sulphuric anhydride, magnesia, alkalies, etc.

A Portland cement within the above limits may be made from chalk, marl or limestone containing carbonate of lime between 80 and 100 per cent., and clay containing silica between 60 and 70 per cent., and alumina between 6 and 10 per cent., mixed in proper proportions, or can be made with argillaceous limestone containing 60 to 70 per cent. of carbonate of lime, and limestone containing from 80 to 100 per cent. of carbonate of lime, the balance being silica and alumina. These are, broadly speaking, the materials from which Portland cement is made all over the world, and the composition of the slurry, paste or raw composition powder is so proportioned with the materials above mentioned, as to give substantially an analysis when calcined, between the limits above mentioned of the finished Portland cement.

The following tables from the Mineral Industry of the United States, Vol. 6, of American and Foreign Portland Cements, give a very fair view of the chemical analysis of American Portland cements, as compared with those of Europe:

American Portland Cements.

Brand of Cement.	SiO_2 Per Cent.	Al_2O_3 Per Cent.	Fe_2O_3 Per Cent.	CaO Per Cent.	MgO Per Cent.	SO_3 Per Cent.	Authority.
Alpha, ...	22.62	8.76	2.66	61.46	2.92	1.52	Booth, Garret & Blair.
Atlas, ...	21.96	8.29	2.67	60.52	3.43	1.49	" " "
Giant, ...	19.92	9.83	2.63	60.32	3.12	1.13	" " "
Saylors, ...	22.68	6.71	2.35	62.30	3.41	1.88	" " "
Vulcanite, ...	21.08	7.86	2.48	63.68	2.62	1.25	" " "
Empire, ...	22.04	6.45	3.41	60.92	3.53	2.73	" " "
Jordan, ...	21.86	7.17	3.73	61.14	2.34	1.94	" " "
Diamond, ...	21.80	7.95	4.95	61.90	1.64	0.79	" " "
Sandusky, ...	23.08	6.16	2.90	62.38	1.21	1.66	" " "
Bronson, ...	29.95	9.74	3.12	63.17	0.75	0.86	Mfr.'s Analysis.
White Cliffs, Ark., ...	22.93	*10.33	....	64.67	0.94	1.05	" "

*Alumina and iron together.

European Portland Cements.

Brand of Cement.	SiO_2 Per Cent.	Al_2O_3 Per Cent.	Fe_2O_3 Per Cent.	CaO Per Cent.	MgO Per Cent.	SO_3 Per Cent.	Authority.
White Label, Alsen, ...	20.48	7.28	3.88	64.30	1.76	2.46	Booth, Garret & Blair.
Dyckerhoff, ...	20.64	7.15	3.69	63.06	2.33	1.39	" " "
Germania, ...	22.08	6.84	3.36	63.72	1.32	1.82	" " "
Hemmoor, ...	21.14	6.95	4.01	63.24	1.44	1.47	" " "
Lagerdorfer, ...	23.55	7.47	2.40	61.99	1.42	1.07	" " "
B. Shoobridge Co., ...	22.20	7.35	4.77	61.46	1.35	1.86	" " "
Francis, ...	22.18	8.48	5.08	61.44	1.34	1.56	" " "
Condor, ...	23.87	6.91	2.27	64.49	1.04	0.88	" " "
Condlot, French, ...	22.30	8.50	3.10	62.80	0.45	0.70	Candlot.
Boulogne, French, ...	22.30	7.00	2.50	61.62	1.04	0.75	"

An examination of these figures will show little, if any, material difference between the cements produced in this country and those of the best brands of Europe, and little, if any, difference between those which have been produced from clay and marl, or chalk and clay as is the case of most of the foreign brands, and the first five of the American brands produced from argillaceous limestone and lime rock, or the last six of the American cements, which are produced from clays and marls and clay and chalk. In other words an application of the test of chemical analysis shows that the Portland cements of this country are practically of the same standard chemical analysis as the best brands produced in Europe.

Raw Materials.—The selection of raw materials to be used with relation to the juxtoposition to each other and their geographical situation to fuel and proper transportation facilities, is the first problem that confronts the cement manufacturer. The relation of the selected materials to each other, whether soft or crystalline, is another problem of the greatest importance, but once these prime factors have been selected, whether limestone and clay, marl and clay, cement rock and limestone, etc., the success of the manufacture depends upon the economical handling, calcining and grinding of his materials.

Dividing these subjects under their respective heads and endeavoring to seek the reason of the success of the American manufacture which has caused the wonderful development of the industry in this country already referred to, it will be found that the results spoken of have been achieved by the better handling of the three problems just mentioned.

Handling of the Raw Material.—In Europe, where the industry originated in districts where the materials were chalk and clay, the simplest method of handling was to mix the wet chalk with the wet clay in pug mills, chasers or other similar appliances, and by the addition of large proportions of water to make the mass so wet that it would flow of its own gravity from place to place in the mills and, finally, into the "backs," or settling tanks which, in the large English and German works, cover many acres. The slurry produced by the admixture of the proper proportions of the two ingredients is allowed to dry in these "backs," in some cases, for a period of weeks, and in others for a period of days—the action of the sun evaporating the water and ultimately leaving the material in the shape of a field of sun-baked clay, showing large fissures, or cracks, all over its surface. Under this process, the irregularly shaped cakes above described are taken from the "backs" to the drying floors around the kilns, or to drying chambers forming parts of the kilns.

In the older style of works there was no method of regulating the uniformity of the mixture between the pug mills and the "backs," and thus an irregular mixture might spoil a large batch of raw material. To obviate this, in more modern works, intermediate basins, called basins de dosage, were introduced in France and adopted in other countries, whereby a considerable proportion of the material on its way to the "backs" could be held, pending chemical analysis, so that it could be brought to a proper combination by additions of either argillaceous or calcareous matter, which could be stirred mechanically, thus making the mass of a uniform and proper composition.

Following the wet process above described, a semi-dry process was first introduced in England and instead of passing the raw materials through wet grinding apparatus, they were passed in the form of a paste through millstones or other similar apparatus, which took out all irregularities of form and made a more dry paste, easily pressed into brick or other forms, which could be treated in a much shorter period than under the old methods, and which afforded excellent material for the action of the kiln.

The processes applied to the clays and chalks of England, were also applied to the wet marls and clays of Germany and Belgium, and with equal success, but as the years went on dry limestones were also used in combination with dry clays, or in combination with cement rock, and these materials were all ground and pulverized dry and, following the old established practice, they were wetted and subjected to the brick process, which prepared them in form for the kiln. In this country, in the early days, the English and German practice was closely followed, for it would have been impossible to introduce a new article bearing the important relation to building that cement does, if the processes of this country differed from that of Europe, the home of the industry. Consequently, when the mills handled the marl and clay of Indiana and of New York

State, they followed closely the English process and made their material quite wet before putting it in the form for the kiln, and Saylor, in his first Lehigh works, dealing with cement rock and argillaceous limestone as his raw material, tried first, as already stated, to make Portland cement by the mere calcination at high temperatures of the rocks, and, failing in this, he quickly went back and followed the English practice by grinding the materials dry and, after wetting and pugging, making them into bricks by hand. All the old methods of preparing the raw material are, as can be seen, predicted upon supplying to the flame of the kiln a properly proportioned, thoroughly pulverized material sufficiently mixed, made into forms of some kind, duly dried and thereby presenting to the flame of the kiln a new rock or stone, containing all the ingredients in proper mechanical union for proper calcination. The more modern American methods, based upon the more modern American kiln, which has worked a revolution in the industry, works at a greater economic advantage in the handling of the raw materials. The marls and clays, but more especially the cement rocks and argillaceous limestones, are handled with the greatest economy and greatest dispatch, and while in the handling of marls which in themselves contain a great amount of water the process has been moderately successful only. In the Lehigh field of the State of Pennsylvania, where the great body of argillaceous limestone is used as above stated, this process, with material of this kind, has produced a wonderful development and by it the rock lying in quarries is brought in cars to the crushers and thence by elevators and conveyor to various forms of mills and ground into a powder. Thence, the material having been properly proportioned by chemical analysis is delivered into the kiln ready for calcination, without going into the expensive method of preparation under the old processes first described. Broadly speaking, therefore, it may be stated that the object of the preparation of the material for the kiln, is to have it as intimately mixed as possible, so as to form a homogenous substance, whether in bricks, balls or other shapes or in powder of infinite fineness.

Kilns. The form of kiln originally used in England and Germany and largely used there at the present day, is the "bottle," or dome kiln, where the raw material above referred to in bricks or other shapes is charged between layers of coke. The kiln is unloaded at the bottom and after the material is drawn from the kiln in the form of clinker the over burned and under burned material having been picked out, it is ready for the next operation of grinding.

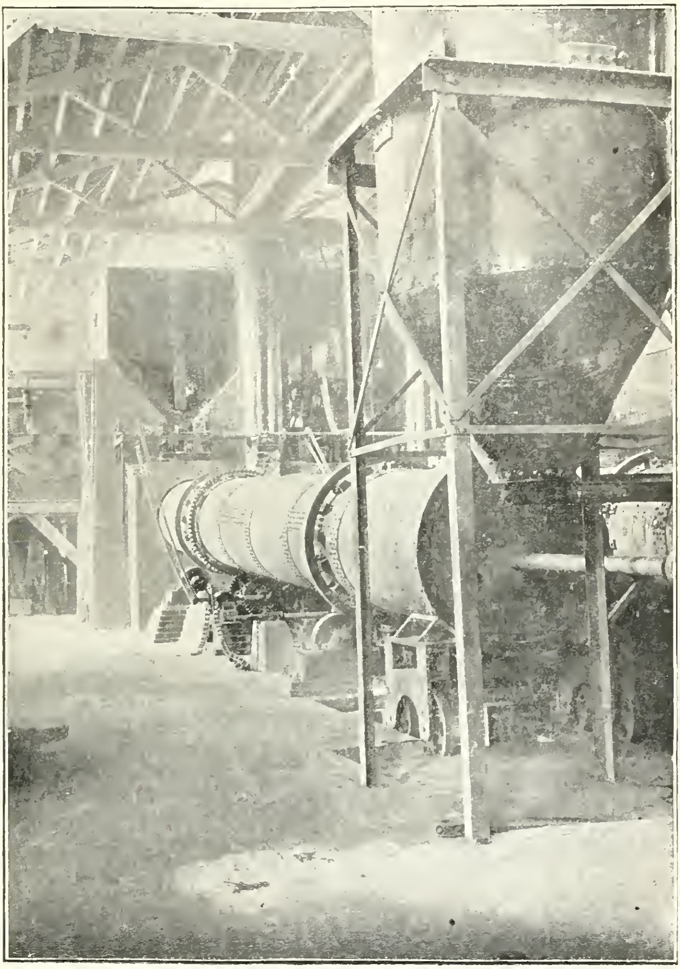
The books are full of the many variations of this "bottle" kiln and the utilization of the heat in the drying of the raw material. As the kiln is intermittent, an enormous amount of heat is lost when it is drawn and charged, and a greater amount of heat is lost while the calcination is going on, and for the purpose of economy in this direction, drying chambers of various kinds have been used, and various forms of construction have been adopted.

Other forms of kiln are also used, one of the most important being the "Hoffman," which consists of a series of chambers built around a central stack, and my means of dampers the gases of the burning chambers are utilized for the drying of material which is placed in the chambers forming a part of this continuous group. Various adaptations of this kiln are also to be seen in Belgium and Germany. The "Hoffman" kiln enabled the manufacturer to use coal, where as coke had been practically the only fuel economically and successfully used in the old-fashioned dome kiln. In order, therefore, to still further utilize coal and make greater economies, the German set out to devise the adoption of the continuous dome kiln to the manufacture of Portland cement. The Shoefer, the Dietsch and the Schneider kilns are forms of what is known as the Etagen kiln, or kiln in several floors, the first two being of great heighth have a drying chamber above, a fire zone half way down and a long cooling chamber beneath. The material for these kilns is brought up by elevators, and after calcination, the clinker is taken out below. The Schneider kiln is more especially adapted to the rejuvenating of the old dome kilns, increasing their output at moderate expense, making them continuous.

In France, the Bauchere and Candlot kilns are forms of the German continuous kilns, but instead of having high stacks, they have draught flues from a group of kilns connected with a single stack, which form drying chambers and heating surfaces for the drying of the raw material. All these forms of kilns are applied only to the calcination of the cement making material, when presented in the form of brick or balls or other definite shapes, because if the material were placed in powder, the choking of the kiln would promptly ensue. They are all based upon the European method of handling the raw material. A more economical method of handling the raw material grew out of what is known especially as the American revolving kiln.

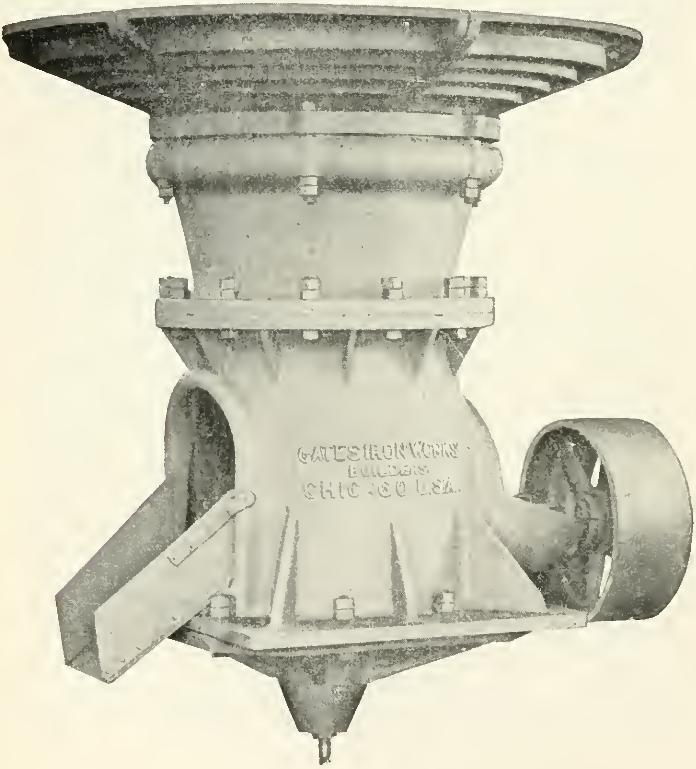
The American Revolving Kiln.

Strange to say, this kiln had its origin in Europe, and was the invention of Ransome, who was a cement expert and the originator of the well-known Ransome concrete construction. It proved a failure in England and its early days in this country were also marked by adversity. Subsequently, under the successful direction of Navarro, Giron and Whittaker, it was perfected, and in it by far the larger proportion of cement in this country is made, and to it and the economies it has permitted, is due the wonderful growth of the industry in this country. This kiln, which is shown in the accompanying cut, is an iron cylinder of about sixty feet long by six feet in diameter, and revolving at about one revolution per minute. At one end the raw material is introduced and at the other a flame produced, either by the injection of oil or by driving in by forced draught of pulverized coal is admitted. The effect of the fire is first to drive the moisture and carbonic acid gas out of the raw materials, and subsequently to calcine it into a clinker in the shape of small lumps or nodules. This clinker produced, drops out at the lower end of the kiln, is conveyed to a cooler, a high iron tower, with forced draught, where it is subjected to the action of the air and is subsequently conveyed to the grinding machinery.



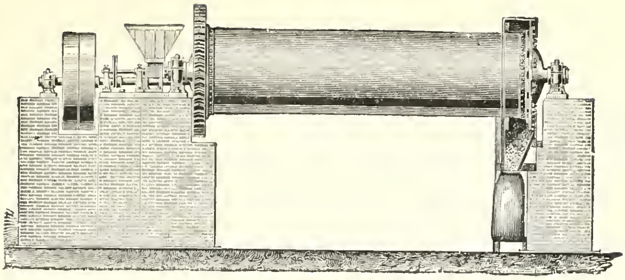
A ROTARY KILN.

Crushing and Grinding Machinery.—When under the American process it became possible to make cement from practically dry material, as is the case with more than three-fourths of all that is produced in this country, a great economy was effected, both in the fuel consumption and in the handling of the material before calcination. To drive out the moisture from the wet material, in some cases 50 to 60 per cent. of its total weight, a very large proportion of heat had to be used and nearly one-half of the fuel consumed was for the purpose of expelling this water, either added to or found combined in the raw material. It is needless to say that this water added also the bulk of the raw material, and required handling at all the stages of the process, up to and including the process of calcination.

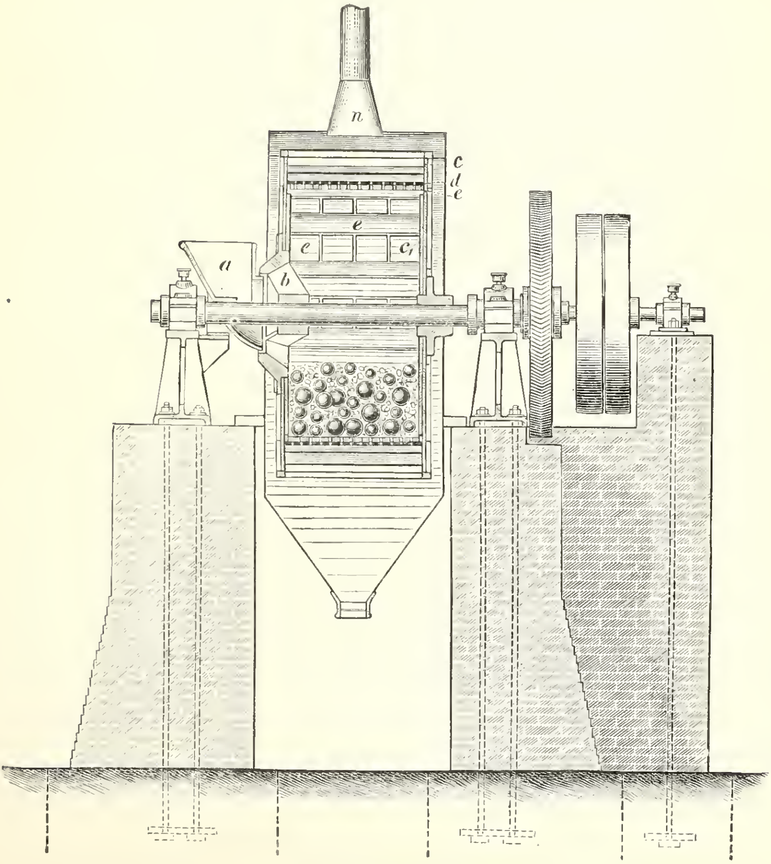


No. 2. GATES CRUSHER.

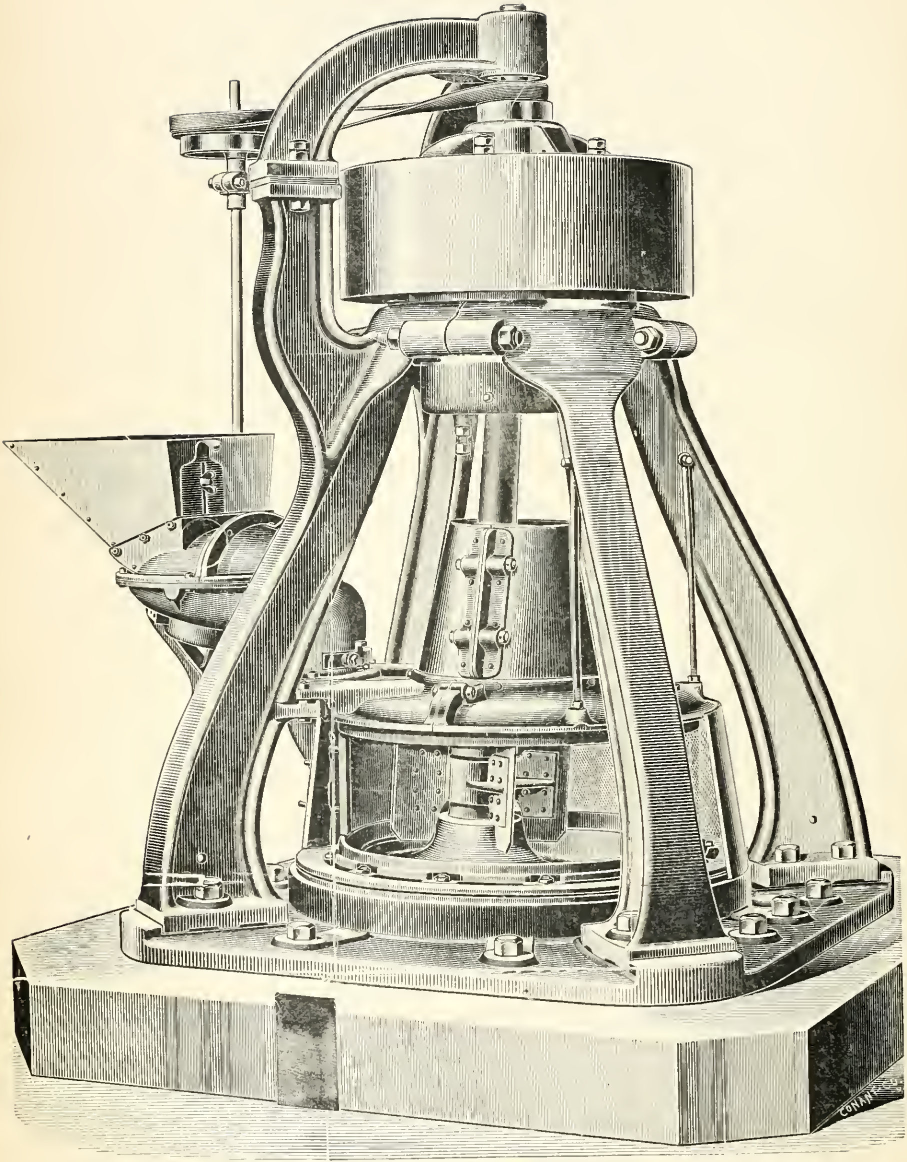
To dispense with this costly process, which could be done by the use of dry raw material, naturally required heavy crushing and grinding apparatus to handle the raw rocks, which took the place of the wet clays, marls and chalks. The American manufacturer was ready to grasp the mechanical appliances invented for this purpose and used in this country. The "Gates Crushers," see Cut No. 2, which had been used largely in the mining regions, were



No. 4. TUBE MILL.

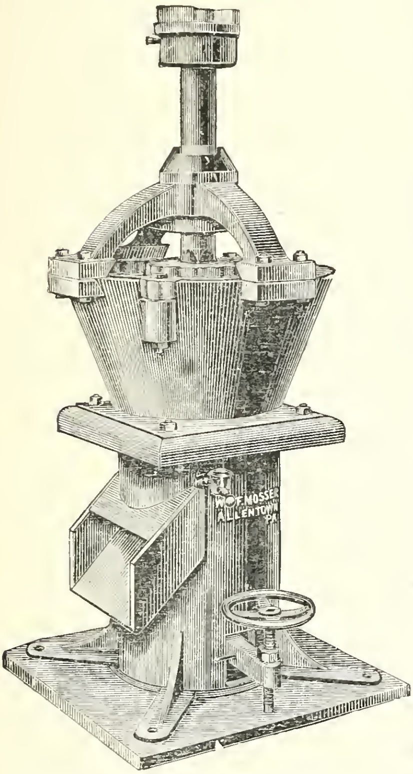


No. 5. BALL MILL.



No. 6. GRIFFIN MILL.

first adopted for the manufacture of cement in Lehigh county, Pa., and are to-day practically standard in all cement mills using rocks as raw materials. After the rocks are crushed in this form of rotary crusher, they are usually fed into a coffe-mill crusher known as the Mosser crusher (Cut No. 3), and the small pieces thus produced are in turn run through heavy rolls which crush them still further, and from these rolls they go to mills of either the Griffin or tube mill type.



No. 3. MOSSER CRUSHER.

Europe, the mother of the cement industry derived her ideas of grinding from the mill-stones in the farmer's mills along the banks of the pastoral stream, and this precedent of using mill-stones driven by gearing, still continues to the present day in many European mills even now adays when steam has superseded water as motive power. More modern mills there however, have adopted the second of the mills above mentioned, namely the Tube and Balls Mills as shown in Cuts Nos. 4 and 5, or the Griffin Mill, which is an American invention, shown in Cut No. 6.

It is possibly due to the 'Griffin" Mill, that the preparation of the raw materials in this country was made so cheap, and the introduction of this mill for the purpose in question, amounts in the field grinding of cement, to almost the same degree of progress, as the rotary kiln does in the field of calcination. Both methods of grinding give excellent results, and may prictically be said to-day to fill the entire field.

The above description of grinding machinery and its development in this country, as applied to the raw material, may also be said to apply to the treatment of the calcined clinker as it comes from the kiln. In Europe, as above stated, the grinding machinery is used practically for the pulverizing of the burnt clinker alone, except in the case where the semi-dry precess is used, but in this country, especially in the Lehigh district in Pennsylvania, the grinding and crushing machinery is used for both the preparation of the raw material and the finished product.

The clinker from the dome, continuous and Hoffman kilns is in the form of small bricks or blocks when drawn therefrom—the carbonic acid gas and moisture having been driven out, the brick which was put in the kiln has shrunk very greatly in size. These bricks or blocks have to be picked over very carefully by hand, and after the over-burned and under-burned pieces have been taken out, the remainder of the material is taken to Gates crushers, where it is crushed, and then by elevators and conveyors delivered to the various crushers above mentioned, and ultimately to the grinding apparatus above described. After it is ground, it is carried away by the same form of conveying apparatus to stock houses. In the case of the product of the revolving kilns, the material is carried automatically by belts to the same form of crushing rolls and crackers.

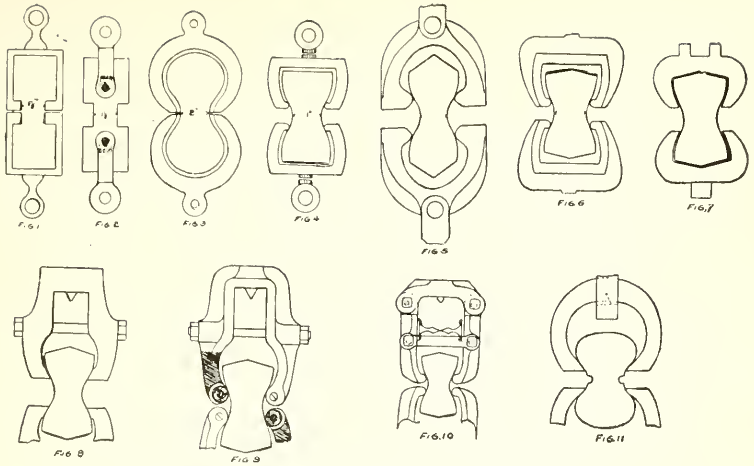
In this form of clinker, the pieces are no larger than walnuts, are mostly much smaller, and the same method of grinding as above described, is pursued. The finished product delivered in the stock house, is now ready for shipment and is put in barrels, paper or duck bags and loaded upon cars.

Testing.—When the finished product is at last in the stock house, the next duty of the manufacturer is to determine his quality by scientific tests. For this purpose, the chemical and testing laboratory becomes a valuable adjunct to the cement plant. All the principal mills have trained chemists and experts with apparatus of the most scientific character for the purpose of analyzing the raw materials out of which their cement is to be made, and for the further purpose of determing, after manufacture, that the cement conforms to the various specifications adopted by the various engineers and government institutions.

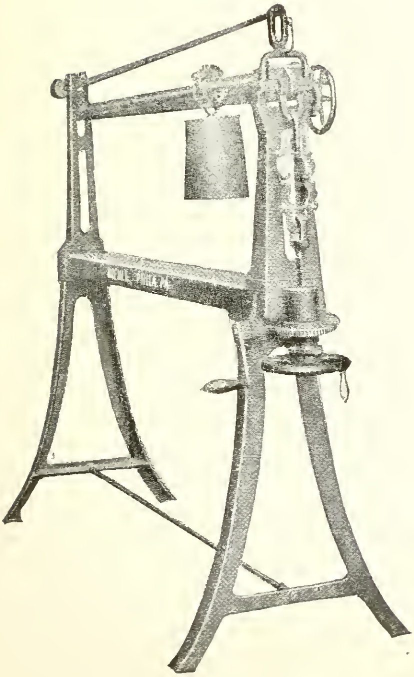
The general requisites in specifications are fineness, tensile strength of the pure cement, and mixtures of cement and sand, and constancy of volume.

Modern specifications may be said for fineness to require that 90 per cent. of the finished product shall pass through a sieve having 100x100 mesh, or say a 10,000 mesh sieve.

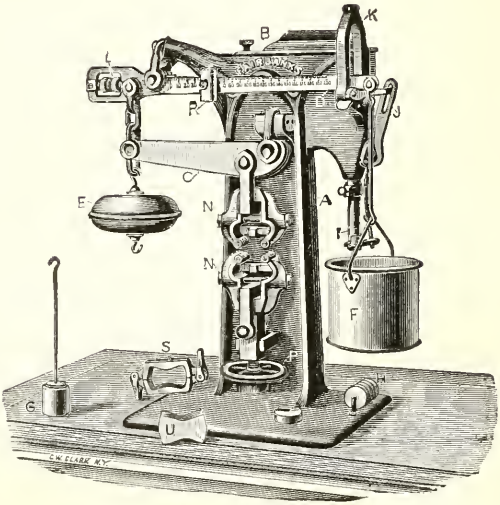
The tensile strain is arrived at by the manufacture, in moulds as per Cut No. 7, of briquettes having a breaking area of one square inch, and these test pieces made of the pure (neat) cement, and in mixtures as high as one part cement to three parts sand, are required to give at 24 hours, 7 days and 28 days, the following results:



No. 7. Testing Clips and Shapes of Briquettes.



No. 8. Riehle Testing Machine.



No. 9. Fairbanks Testing Machine.

	24 hours.	7 days.	28 days.
Neat,	100 to 200 pds.	400 to 500 pds.	500 to 700 pds.
One part cement, 3 parts sand,		150 to 250 pds.	200 to 300 pds.

These test briquettes are inserted between the grips of the testing machine, shown in Cuts Nos. 8 and 9, and by the application of strain at the rate of 400 pounds per minute, give the results within the limits above mentioned.

For the tests for constancy of volume, small pats are made of the neat cement. One pat is kept in water and the other is kept in air and at the end of 28 days they are to show no disintegration, checking or cracking.

The range of specifications in this country is very broad, and no general system has been adopted, such as has been in Germany, and the variations between the requirements of specification causes no little trouble to the manufacturer. Generally speaking, however, American Portland cements, as contrasted with those made abroad, are showing not only as good but better results, and in this country, as well as in the export trade, are meeting the most exacting of requirements.

Growth of the Industry.—In view of the fact that Portland cement has been for the past thirty (30) years the main binding ingredient of the heaviest masonry in the largest pieces of construction in the world, it can readily be understood the difficulties that were met with in the introduction of American Portland cement.

In the early days of the industry, where the change from the well-known brands of foreign Portland cements to the American product meant but the saving of $2,000 or $3,000 in a building involving the cost of $1,000,000 or more, it was difficult for the American cement, which was at that time considered a doubtful experiment, to obtain a foothold. The prejudice was hard to overcome, but owing to the quality of the American product and the perseverance of the American manufacturer, American Portland cement was gradually forced into the market and by degrees won the laurels which it now wears.

Twenty years ago, the production of American Portland cement amounted to 85,000 barrels per annum. The United States Geological Survey figures for the year 1901, show a production of over 12,700,000 barrels, and this enormous increase in the output of Portland cement has been made without diminishing the 8,000,000 or 9,000,000 barrels of natural cement which are still being produced. Practically the same amount of the latter grade of cement has been produced for the last five years.

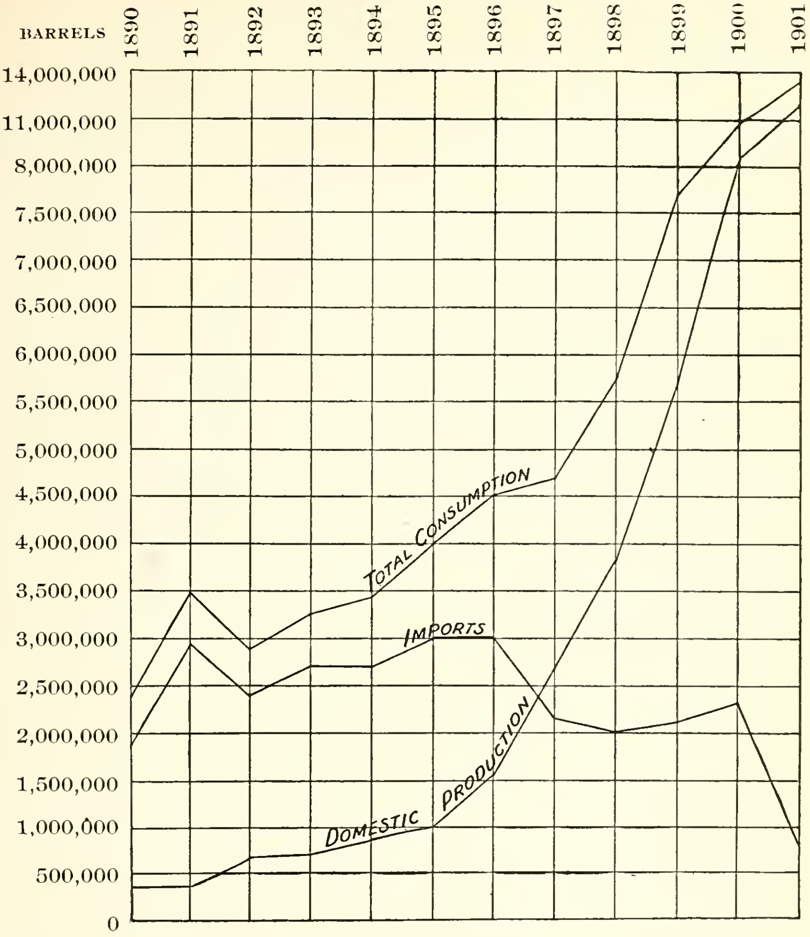
Without going into the statistics of the production of natural cement at this time, the figures of the U. S. Geological Survey on the production of Portland cement in the United States for the last twenty years are as follows:

Production of Portland Cement in the United States.

Year.	Number of works.	Number of barrels.
1882,		85,000
1883,		90,000
1884,		100,000
1885,		150,000
1886,		150,000
1887,		250,000
1888,		250,000
1889,		No estimate.
1890,	17	335,500
1891,	17	454,813
1892,	16	547,440
1893,	19	590,652
1894,	24	798,757
1895,	22	990,320
1896,	26	1,543,023
1897,	29	2,677,775
1898,	31	3,692,284
1899,	36	5,652,266
1900,	50	8,482,020
1901,		12,711,225

It will be noted by the above table that up to the year 1889 that estimates of production merely were given by the U. S. Geological Survey, but since that period, the number of works has been included together with the actual figures covered by the report of the survey.

The following diagram shows the domestic production, importation and total consumption of Portland cement in the United States in the last twelve years:



GRAPHIC REPRESENTATION OF THE PRODUCTION, IMPORTATION AND TOTAL CONSUMPTION OF PORTLAND CEMENT IN THE UNITED STATES FROM 1890 TO 1901.

These figures show that the imports of cement, with some small variations, have remained constant since 1890, but the production of American Portland cement, which in that year amounted to only 335,500 barrels, or 15 per cent of the total amount consumed, has increased in eleven years thirty-five times and now supplies about 95 per cent of the demand.

The production and annual increase of the production for the past twelve years is as follows:

The following table shows the products, imports, exports and consumption of all grades of cement, natural and Portland, for the past five years for "Mineral Industry of the United States." The figures vary from those of the United States Geological Survey, as all cements are taken on a basis of 300-pound barrel as a unit:

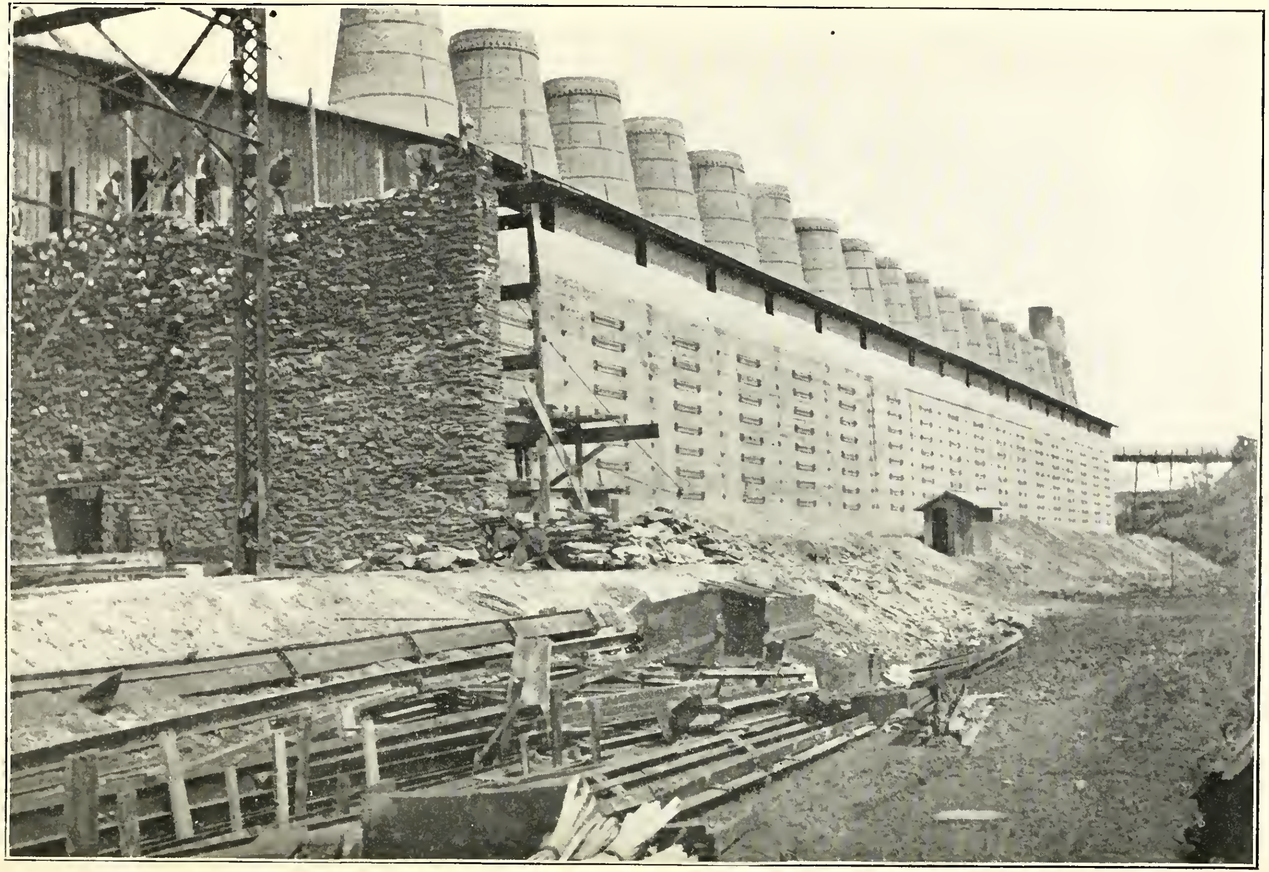
CEMENT PRODUCTION, IMPORTS, EXPORTS, AND CONSUMPTION IN THE UNITED STATES.—IN BARRELS OF 300 POUNDS.

Year.	Production.			
	Natural Hydraulic.	Portland.	Total Barrels.	Value.
1892,	8,211,181	547,440	8,758,621	$7,152,750
1893,	7,445,950	673,989	8,119,939	6,063,131
1894,	7,595,259	738,196	8,633,455	5,478,051
1895,	7,694,053	998,745	8,692,798	6,027,374
1896,	7,407,311	2,103,044	9,510,355	6,888,441
1897,	7,781,377	3,030,628	10,812,005	7,648,613
1898,	8,161,078	4,989,664	13,150,742	10,223,822
1899,	9,686,447	8,067,161	17,753,608	15,860,731
1900,	9,177,222	11.309,052	20,486,274	15,393,109

Year.	Imports.		Exports.		Consumption.	
	Barrels.	Value.	Barrels.	Value.	Barrels.	Value.
1892,	3,254,183	$3,378,824	107,894	$169,538	11,905,000	$10,361,543
1893,	3,565,532	3,470,169	112,518	174,663	11,573,451	9,358,737
1894,	3,540,820	3,396,729	120,967	180,881	12,137,955	8,859,708
1895,	3,996,520	3,873,123	95,559	131,541	12,676,798	9,931,572
1896,	3,561,160	3,394,426	69,632	103,315	12,195,959	9,369,700
1897,	2,787,760	2,688,122	61,759	103,389	13,538,006	10,233,346
1898,	2,685,092	2,624,228	70,892	98,121	15,764,942	12,749,929
1899,	2,810,951	2,858,286	147,029	213,457	20,417,530	18,505,560
1900,	3,182,245	3,330,445	186,586	289,186	23,481,933	18,434 368

The growth of the consumption of cement given by periods of ten years is as follows:

Year.	Pounds per capita.
1850,	6.46
1860,	10.49
1870,	12.77
1880,	13.04
1890,	33.93
1900,	91.82



A SERIES OF DOME KILNS IN USE AT A PENNSYLVANIA CEMENT WORKS.

Generally, therefore ,it may be safely said that the cement industry is growing rapidly, but most especially is this the case with the manufacture of Portland cement, the production of which this year is expected to largely exceed all previous years.

Growth of the Industry in Pennsylvania.—As stated in the historical portion of this article, the first successful works in the United States were those of Mr. David O. Saylor, at Coplay, Lehigh county, Pa., and this plant, together with the works of the Wampun Cement Company, in Lawrence county, were the first producers in the State of Pennsylvania. It was practically these two works that furnished the 85,000 barrels of Portland cement mentioned in the census of 1882, and during the early years of the industry, when, after the Wampun works ceased to be a large producer, it was the Saylor works that was the largest contributor to the census returns until about the year 1885.

The centre of the industry in this country for years has been in the territory lying practically between Phillipsburg, N. J., and Cementon and Siegfried's Bridge, in Lehigh and Northampton counties, Pa. This field embraces nearly all the largest producing works in the United States, and within it are gathered nearly three-quarters of the total producing capacity in the country. As far back as 1890, when there were sixteen works in the country, the works located in Lehigh county and one works located near Phillipsburg, N. J., produced practically 60 per cent. of all the Portland cement made in this country. This percentage of production has been constant. Almost ever since 1890 the same five works produced 61 per cent. of the total output. In 1897, they produced 74.8 per cent. of the total output. In 1898, the, what is known as the Lehigh district embraced eight works and produced 72.4 per cent. of the 3,692,284 barrels produced in the United States. In 1899, the eleven works embraced in the district above mentioned, produced 72.7 per cent. of the total output, and in 1900 their production was 72.6 per cent. of the total output, the number of works having grown to fifteen. The figures for the year 1901 show that out of 12,711,225 barrels, the output for the Lehigh district was 8,595,340, or over two-thirds of the total output, the number of works having increased but slightly.

What is known as the Lehigh district embraces the following works: In New Jersey: The Edison, Alpha and Vulcanite. In Pennsylvania: The Northampton, Phoenix, Dexter, Nazareth, Atlas, Lawrence, Reading, Bonneville, Whitehall, Hercules, Coplay, Lehigh, Martin's Creek and American Cement Companies. Most of these companies have more than one works. In addition to these works, outside of this district, but still in the State of Pennsylvania, is the Clinton Cement Works, near Pittsburg, Pa., where slag cement is made, and the National Cement Company at Wampun, Pa., where Portland cement is made from limestone and clay. Many of the larger works in the Lehigh district have more than a single plant—the Vulcanite Portland Cement Company have two large mills, the Alpha Portland Cement Works have two mills, the Atlas Portland Cement Works have two mills, the Coplay Cement Works have three mills, the Lehigh Portland Cement Works have three mills and the American Cement Company has six mills, all of them in full operation and producing more largely than ever.

The figures for Pensylvania's production, as set forth on the closing pages of this report, together with what has been above written, form a clear exposition of the history, method of manufacture, scientific control, development and growth of one of the newest and most vigorous of American industries, which had its beginning in our Commonwealth and which, after a period of nearly thirty years, still has within her borders practically 55 per cent. of the total production in this great country.

—*Contributed by Robert W. Lesley.*

COMPARATIVE STATISTICS OF MANUFACTURES. 1892 SERIES.

DAYS IN OPERATION.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895 1896, 1897, 1898, 1899, 1900 AND 1901.

NOTE.—(In this table the average number of days of employment by the same establishments for each of the years 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1892. Forty-four industries, representing 354 establishments, are considered.)

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PIG IRON.				
1892,	13	321	....	....
1893,	13	286	—35	....
1894,	13	301	+15	....
1895,	13	327	+26	....
1896,	13	293	—34	....
1897,	13	319	+26	....
1898,	13	344	+25	....
1899,	13	322	—22	....
1900,	13	316	—6	....
1901,	13	337	+21	+16
ROLLING MILLS—GENERAL PRODUCT.				
1892,	32	314	....	....
1893,	32	307	—7	....
1894,	32	300	—7	....
1895,	32	310	+10	....

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
ROLLING MILLS—GENERAL PRODUCT—Continued.				
1896,	32	308	—2	....
1897,	32	311	+3	....
1898,	32	321	+10	....
1899,	32	324	+3	....
1900,	32	320	—4	....
1901,	32	316	—4	+02
IRON AND STEEL SHEETS AND PLATES.				
1892,	14	290	....	....
1893,	14	243	—47	....
1894,	14	267	+24	....
1895,	14	307	+40	....
1896,	14	258	—49	....
1897,	14	271	+13	....
1898,	14	290	+19	....
1899,	14	294	+4	....
1900,	14	272	—22	....
1901,	14	278	+6	—12
PLATE AND BAR.				
1892,	3	250	....	....
1893,	3	198	—52	....
1894,	3	232	+34	....
1895,	3	257	+25	....
1896,	3	229	—28	....

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PLATE AND BAR—Continued.				
1897,	3	285	+56	....
1898,	3	300	+15	....
1899,	3	302	+2	....
1900,	3	284	—18	....
1901,	3	291	+7	+41
STEEL.				
1892,	13	281	....	....
1893,	13	270	—11	....
1894,	13	272	+2	....
1895,	13	279	+7	....
1896,	13	219	—60	....
1897,	13	271	+52	....
1898,	13	282	+11	....
1899,	13	285	+3	....
1900,	13	281	—4	....
1901,	13	296	+15	+15
ARCHITECTURAL CAST AND WROUGHT IRON WORK.				
1892,	4	307	....	....
1893,	4	308	+1	....
1894,	4	307	—1	....
1895,	4	306	—1	....
1896,	4	305	—1	....
1897,	4	304	—1	...

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
ARCHITECTURAL CAST AND WROUGHT IRON WORK—Continued.				
1898,	4	306	+2	....
1899,	4	305	—1	....
1900,	4	305	....	....
1901,	4	306	+1	—1
IRON FORGING.				
1892,	4	262	....	....
1893,	4	244	—18	....
1894,	4	296	+52	....
1895,	4	289	—7	....
1896,	4	246	—43	....
1897,	4	267	+21	....
1898,	4	293	+26	....
1899,	4	295	+2	....
1900,	4	285	—10	....
1901,	4	295	+10	+33
NAILS AND SPIKES.				
1892,	10	256	....	....
1893,	10	230	—26	....
1894,	10	228	—2	....
1895,	10	220	—8	....
1896,	10	205	—15	....
1897,	10	243	+38	....
1898,	10	205	—38	....

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
NAILS AND SPIKES—Continued.				
1899,	10	229	+24	....
1900,	10	208	—21	....
1901,	10	266	+58	+10
NUTS AND BOLTS.				
1892,	2	306	....	....
1893,	2	305	—1	....
1894,	2	288	—17	....
1895,	2	291	+3	....
1896,	2	298	+7	....
1897,	2	304	+6	....
1898,	2	306	+2	....
1899,	2	304	—2	....
1900,	2	295	—9	....
1901,	2	286	—9	—20
PIPES AND TUBES.				
1892,	4	267	....	....
1893,	4	260	—7	....
1894,	4	268	+8	....
1895,	4	288	+20	....
1896,	4	296	+8	....
1897,	4	278	—18	....
1898,	4	284	+6	....
1899,	4	279	—5	....
1900,	4	283	+4	....
1901,	4	303	+20	+36

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
IRON FOUNDRIES AND MACHINE WORKS.				
1892,	25	301	....	....
1893,	25	279	—22	....
1894,	25	282	+3	....
1895,	25	299	+17	....
1896,	25	289	—10	....
1897,	25	298	+9	....
1898,	25	300	+2	....
1899,	25	305	+5	....
1900,	25	303	—2	....
1901,	25	303	....	+2
STOVES, RANGES, HEATERS, ETC.				
1892,	9	284	....	....
1893,	9	272	—12	....
1894,	9	210	—62	....
1895,	9	229	+19	....
1896,	9	222	—7	....
1897,	9	236	+14	....
1898,	9	246	+10	....
1899,	9	247	+1	....
1900,	9	224	—23	....
1901,	9	234	+10	—50

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
HARDWARE.				
1892,	4	295	....	....
1893,	4	249	—46	....
1894,	4	205	—44	....
1895,	4	260	+55	....
1896,	4	260	....	....
1897,	4	261	+1	....
1898,	4	233	—28	....
1899,	4	268	+35	....
1900,	4	247	—21	....
1901,	4	293	+46	—2
MALLEABLE IRON.				
1892,	2	302	....	....
1893,	2	262	—40	....
1894,	2	247	—15	....
1895,	2	272	+25	....
1896,	2	270	—2	....
1897,	2	273	+3	....
1898,	2	292	+19	....
1899,	2	292	....	....
1900,	2	273	—19	....
1901,	2	302	+29	....
SAWS, EDGE TOOLS, ETC.				
1892,	5	302	....	....
1893,	5	284	—18	....

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
SAWS, EDGE TOOLS, ETC.—Continued.				
1894,	5	286	+2	....
1895,	5	294	+8	....
1896,	5	279	—15	....
1897,	5	274	—5	....
1898,	5	299	+25	....
1899,	5	301	+2	....
1900,	5	309	+8	....
1901,	5	301	—8	—1
METAL AND METALLIC GOODS.				
1892,	8	321	....	....
1893,	8	282	—39	....
1894,	8	288	+6	....
1895,	8	311	+23	....
1896,	8	304	—7	....
1897,	8	288	—16	....
1898,	8	309	+21	....
1899,	8	324	+15	....
1900,	8	304	—20	....
1901,	8	326	+22	+5
LOCOMOTIVES AND ENGINES.				
1892,	14	305	....	....
1893,	14	284	—21	....
1894,	14	267	—17	....

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
LOCOMOTIVES AND ENGINES—Continued.				
1895,	14	292	+25	....
1896,	14	291	—1	....
1897,	14	295	+4	....
1898,	14	301	+6	....
1899,	14	306	+5	....
1900,	14	307	+1	....
1901,	14	304	—3	—1
ENGINES AND BOILERS.				
1892,	6	323	....	...
1893,	6	289	—34	....
1894,	6	298	+9	....
1895,	6	292	—6	....
1896,	6	291	—1	....
1897,	6	297	+6	....
1898,	6	303	+6	....
1899,	6	303	....	....
1900,	6	302	—1	....
1901,	6	301	—1	—22
BOILERS.				
1892,	7	277	....	....
1893,	7	250	—27	....
1894,	7	220	—30	....
1895,	7	205	—15	....

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
BOILERS—Continued.				
1896,	7	209	+4	....
1897,	7	248	+39	....
1898,	7	277	+29	....
1899,	7	307	+30	....
1900,	7	308	+1	....
1901,	7	308	....	+31
BRIDGES.				
1892,	4	310	....	....
1893,	4	305	—5	....
1894,	4	305	....	....
1895,	4	303	—2	....
1896,	4	285	—18	....
1897,	4	305	+20	....
1898,	4	304	—1	....
1899,	4	284	—20	....
1900,	4	297	+13	....
1901,	4	309	+12	—1
CAR SPRINGS.				
1892,	1	312	....	....
1893,	1	312	....	....
1894,	1	255	—57	....
1895,	1	277	+22	....
1896,	1	255	—22	....
1897,	1	244	—11	....

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CAR SPRINGS—Continued.				
1898,	1	286	+42	....
1899,	1	300	+14	....
1900,	1	305	+5	....
1901,	1	303	—2	—9
CAR COUPLERS.				
1892,	1	310	....	....
1893,	1	248	—62	....
1894,	1	203	—45	....
1895,	1	285	+82	....
1896,	1	303	+18	....
1897,	1	303	....	....
1898,	1	303	....	....
1899,	1	303	....	....
1900,	1	303	....	....
1901,	1	303	....	—7
CARS AND CAR WHEELS.				
1892,	8	301	....	....
1893,	8	282	—19	....
1894,	8	261	—21	....
1895,	8	303	+42	....
1896,	8	284	—19	....
1897,	8	288	+4	....
1898,	8	297	+9	....
1899,	8	304	+7	....

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CARS AND CAR WHEELS—Continued.				
1900,	8	304	....	....
1901,	8	305	+1	+4
WINDOW GLASS, BOTTLE AND TABLE GOODS.				
1892,	17	253	....	....
1893,	17	195	—58	....
1894,	17	261	+66	....
1895,	17	241	—20	....
1896,	17	229	—12	....
1897,	17	268	+39	....
1898,	17	271	+3	....
1899,	17	264	—7	....
1900,	17	244	—20	....
1901,	17	235	—9	—18
SHIP BUILDING.				
1892,	1	310	....	....
1893,	1	309	—1	....
1894,	1	310	+1	....
1895,	1	307	—3	....
1896,	1	307	....	....
1897,	1	310	+3	....
1898,	1	307	—3	....
1899,	1	302	—5	....
1900,	1	302	....	....
1901,	1	313	+11	+3

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PIANOS AND ORGANS.				
1892,	2	303	....	....
1893,	2	280	—23	....
1894,	2	259	—21	....
1895,	2	290	+31	....
1896,	2	298	+8	....
1897,	2	298	....	....
1898,	2	296	—2	....
1899,	2	300	+4	....
1900,	2	304	+4	....
1901,	2	299	—5	—4
RUBBER BOOTS AND SHOES.				
1892,	1	250	....	....
1893,	1	230	—20	....
1894,	1	248	+18	....
1895,	1	271	+23	....
1896,	1	244	—27	....
1897,	1	222	—22	....
1898,	1	244	+22	....
1899,	1	243	—1	....
1900,	1	233	—10	....
1901,	1	268	+35	+18
CARBONS.				
1892,	1	300	....	...
1893,	1	300	....	...

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CARBONS—Continued.				
1894,	1	300	....	....
1895,	1	300	....	....
1896,	1	310	+10	....
1897,	1	310	....	....
1898,	1	310	....	....
1899,	1	290	—20	....
1900,	1	284	—6	....
1901,	1	294	+10	—6
CARPETS.				
1892,	24	280	....	....
1893,	24	218	—62	....
1894,	24	259	+41	....
1895,	24	277	+18	....
1896,	24	263	—14	....
1897,	24	291	+28	....
1898,	24	286	—5	....
1899,	24	299	+13	....
1900,	24	297	—2	....
1901,	24	290	—7	+10
WOOLEN YARNS.				
1892,	10	299	....	....
1893,	10	245	—54	....
1894,	10	277	+32	....
1895,	10	293	+16	....

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WOOLEN YARNS—Continued.				
1896,	10	269	—24	....
1897,	10	296	+27	....
1898,	10	274	—22	....
1899,	10	274	....	....
1900,	10	299	+25	....
1901,	10	296	—3	—3
COTTON YARNS.				
1892,	3	296	....	....
1893,	3	250	—46	....
1894,	3	261	+11	....
1895,	3	288	+27	....
1896,	3	276	—12	....
1897,	3	297	+21	....
1898,	3	295	—2	....
1899,	3	306	+11	....
1900,	3	306	....	....
1901,	3	288	—18	—8
WORSTED YARNS.				
1892,	3	300	....	....
1893,	3	199	—101	....
1894,	3	277	+78	....
1895,	3	301	+24	....
1896,	3	246	—55	....
1897,	3	288	+42	....

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WORSTED YARNS—Continued.				
1898,	3	256	—32	....
1899,	3	290	+34	....
1900,	3	295	+5	....
1901,	3	297	+2	—3
MISCELLANEOUS YARNS.				
1892,	9	302	....	....
1893,	9	252	—50	....
1894,	9	262	+10	....
1895,	9	284	+22	....
1896,	9	214	—70	....
1897,	9	283	+69	....
1898,	9	263	—20	....
1899,	9	275	+12	....
1900,	9	268	—7	....
1901,	9	289	+21	—13
WOOLEN GOODS.				
1892,	16	299	....	....
1893,	16	245	—54	....
1894,	16	278	+33	....
1895,	16	298	+20	....
1896,	16	274	—24	....
1897,	16	290	+16	....
1898,	16	289	—1	....
1899,	16	287	—2	....

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WOOLEN GOODS—Continued.				
1900,	16	291	+4	....
1901,	16	280	—11	—19
COTTON GOODS.				
1892,	17	303	....	....
1893,	17	249	—54	....
1894,	17	246	—3	....
1895,	17	285	+39	....
1896,	17	258	—27	....
1897,	17	293	+35	....
1898,	17	298	+5	....
1899,	17	299	+1	....
1900,	17	288	—11	....
1901,	17	282	—6	—21
COTTON AND WOOLEN GOODS.				
1892,	12	301	....	....
1893,	12	255	—46	....
1894,	12	258	+3	....
1895,	12	265	+7	....
1896,	12	220	—45	....
1897,	12	270	+50	....
1898,	12	272	+2	....
1899,	12	274	+2	....
1900,	12	258	—16	....
1901,	12	263	+5	—38

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WORSTED GOODS.				
1892,	3	310	....	....
1893,	3	222	—88	....
1894,	3	237	+15	....
1895,	3	265	+28	....
1896,	3	220	—45	....
1897,	3	289	+69	....
1898,	3	273	—16	....
1899,	3	295	+22	....
1900,	3	258	—37	....
1901,	3	253	—5	—57
KNIT GOODS.				
1892,	5	313	....	....
1893,	5	278	—35	....
1894,	5	254	—24	....
1895,	5	283	+29	....
1896,	5	261	—22	....
1897,	5	271	+10	....
1898,	5	253	—18	....
1899,	5	282	+29	....
1900,	5	285	+3	....
1901,	5	257	—28	—56
CHENILLE GOODS.				
1892,	5	322	....	....
1893,	5	295	—27	....

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CHENILLE GOODS—Continued.				
1894,	5	299	+4	....
1895,	5	300	+1	....
1896,	5	291	—9	....
1897,	5	301	+10	....
1898,	5	302	+1	....
1899,	5	292	—10	....
1900,	5	264	—28	....
1901,	5	281	+17	—41
MIXED TEXTILES.				
1892,	9	303	....	....
1893,	9	290	—13	....
1894,	9	289	—1	....
1895,	9	298	+9	....
1896,	9	282	—16	....
1897,	9	282	....	....
1898,	9	300	+18	....
1899,	9	300	....	....
1900,	9	300	....	....
1901,	9	289	—11	—14
TAPESTRY AND TABLE COVERS.				
1892,	3	302	....	....
1893,	3	291	—11	....
1894,	3	300	+9	....
1895,	3	295	—5	....

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
TAPESTRY AND TABLE COVERS—Continued.				
1896,	3	289	—6	....
1897,	3	291	+2	....
1898,	3	291	....	....
1899,	3	277	—14	....
1900,	3	252	—25	....
1901,	3	277	+25	—25
HOSIERY.				
1892,	13	296	....	....
1893,	13	261	—35	....
1894,	13	273	+12	....
1895,	13	294	+21	....
1896,	13	288	—6	....
1897,	13	288	....	....
1898,	13	279	—9	....
1899,	13	280	+1	....
1900,	13	275	—5	....
1901,	13	290	+15	—6
HOSIERY AND KNIT GOODS.				
1892,	3	300	....	....
1893,	3	293	—7	....
1894,	3	300	+7	....
1895,	3	272	—28	....
1896,	3	289	+17	....

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION BY SAME ESTABLISHMENTS FOR EACH OF THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
HOSIERY AND KNIT GOODS—Continued.				
1897,	3	300	+11	....
1898,	3	300	....	....
1899,	3	300	....	....
1900,	3	297	—3	....
1901,	3	298	+1	—2
SILK BROAD GOODS.				
1892,	4	304	....	....
1893,	4	247	—57	....
1894,	4	292	+45	....
1895,	4	303	+11	....
1896,	4	274	—29	....
1897,	4	303	+29	....
1898,	4	292	—11	....
1899,	4	301	+9	....
1900,	4	285	—16	....
1901,	4	268	—17	—36

PERSONS EMPLOYED.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

(In this table the average number of persons employed by the same establishments for each of the years 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 and 1901 is presented with the relative increase or decrease, together with the increase or decrease 1901 over 1892. Forty-four industries, representing 354 establishments as considered.)

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PIG IRON.				
1892,	13	2,668	......	......
1893,	13	2,222	—446	......
1894,	13	1,751	—471	......
1895,	13	2,269	+518	......
1896,	13	2,242	—27	......
1897,	13	1,904	—338	......
1898,	13	2,124	+220	......
1899,	13	3,015	+891	......
1900,	13	3,057	+42	......
1901,	13	2,459	—598	—209
ROLLING MILLS—GENERAL PRODUCT.				
1892,	32	35,368	......	......
1893,	32	32,695	—2,663	......
1894,	32	30,120	—2,575	......
1895,	32	35,123	+5,003	......
1896,	32	34,755	—368	......
1897,	32	35,579	+824	......
1898,	32	40,175	+4,596	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
ROLLING MILLS—GENERAL PRODUCT—Continued.				
1899,	32	43,533	+3,358	......
1900,	32	29,873	—13,660	......
1901,	32	38,724	+8,851	+3,356
IRON AND STEEL SHEETS AND PLATES.				
1892,	14	5,089	......	......
1893,	14	4,590	—499	......
1894,	14	4,294	—296	......
1895,	14	4,869	+575	......
1896,	14	4,522	—347	......
1897,	14	5,205	+683	......
1898,	14	6,524	+1,319	......
1899,	14	8,327	+1,803	......
1900,	14	7,884	—443	......
1901,	14	9,456	+1,572	+4,367
PLATE AND BAR.				
1892,	3	3,269	......	......
1893,	3	2,330	—939	......
1894,	3	1,735	—595	......
1895,	3	2,263	+528	......
1896,	3	1,295	—968	......
1897,	3	1,360	+65	......
1898,	3	2,372	+1,012	......
1899,	3	2,709	+337	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894. 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PLATE AND BAR—Continued.				
1900,	3	2,752	+43	......
1901,	3	1,595	—1,157	—1,674
STEEL.				
1892,	13	13,075	......	......
1893,	13	10,585	—2,490	......
1894,	13	9,778	—807	......
1895,	13	12,138	+2,360	......
1896,	13	10,058	—2,080	......
1897,	13	10,361	+303	......
1898,	13	12,176	+1,815	......
1899,	13	14,578	+2,402	......
1900,	13	8,138	—6,440	......
1901,	13	17,480	+9,342	+4,405
ARCHITECTURAL CAST AND WROUGHT IRON WORKS.				
1892,	4	1,350	......	......
1893,	4	1,202	—148	......
1894,	4	976	—226	......
1895,	4	1,438	+462	......
1896,	4	1,298	—140	......
1897,	4	1,086	—212	......
1898,	4	1,435	+349	......
1899,	4	1,755	+320	......
1900,	4	2,321	+566	......
1901,	4	2,601	+280	+1,251

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
IRON FORGING.				
1892,	4	583	......	......
1893,	4	507	—76	......
1894,	4	469	—38	......
1895,	4	594	+125	......
1896,	4	569	—25	......
1897,	4	533	—36	......
1898,	4	668	+135	......
1899,	4	670	+2	......
1900,	4	161	—509	......
1901,	4	160	—1	—423
NAILS AND SPIKES.				
1892,	10	3,015	......	......
1893,	10	2,840	—175	......
1894.	10	2,305	—535	......
1895,	10	2,422	+117	......
1896,	10	1,891	—531	......
1897,	10	1,714	—177	......
1898,	10	2,099	+385	......
1899,	10	2,360	+261	......
1900,	10	2,647	+287	......
1901,	10	1,607	—1,040	—1,408
NUTS AND BOLTS.				
1892,	2	615	......	......
1893,	2	695	+80	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
NUTS AND BOLTS—Continued.				
1894,	2	560	—135	......
1895,	2	638	+78	......
1896,	2	530	—108	......
1897,	2	576	+46	......
1898,	2	758	+182	......
1899,	2	955	+197	......
1900,	2	1,268	+313	......
1901,	2	1,021	—247	+406
PIPES AND TUBES.				
1892,	4	1,336	......	......
1893,	4	1,311	—25	......
1894,	4	1,263	—48	......
1895,	4	1,454	+191	......
1896,	4	1,326	—128	......
1897,	4	1,357	+31	......
1898,	4	1,612	+255	......
1899,	4	1,720	+108	......
1900,	4	2,052	+332	......
1901,	4	2,364	+312	+1,028
IRON FOUNDRIES AND MACHINE WORKS.				
1892,	25	3,554	......	......
1893,	25	3,097	—457	......
1894,	25	2,603	—494	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
IRON FOUNDRIES AND MACHINE WORKS—Continued.				
1895,	25	3,066	+463	......
1896,	25	2,794	—272	......
1897,	25	3,002	+208	......
1898,	25	3,417	+415	......
1899,	25	4,091	+674	......
1900,	25	4,113	+22	......
1901,	25	4,477	+364	+923
STOVES, RANGES, HEATERS, ETC.				
1892,	9	1,243	......	......
1893,	9	1,361	+118	......
1894,	9	1,238	—123	......
1895,	9	1,285	+47	......
1896,	9	1,296	+11	......
1897,	9	1,278	—18	......
1898,	9	1,310	+32	......
1899,	9	1,304	—6	......
1900,	9	1,308	+4	......
1901,	9	1,324	+16	+81
HARDWARE.				
1892,	4	1,560	......	......
1893,	4	1,544	—16	......
1894,	4	1,464	—80	......
1895,	4	1,586	+122	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
HARWARE—Continued.				
1896,	4	1,464	—122	......
1897,	4	1,569	+105	.. ...
1898,	4	1,695	+126	......
1899,	4	1,926	+231	......
1900,	4	1,706	—220	......
1901,	4	1,751	+45	+191
MALLEABLE IRON.				
1892,	2	401	......	......
1893,	2	362	—39	......
1894,	2	293	—69	......
1895,	2	367	+74	......
1896,	2	445	+78	......
1897,	2	431	—14	......
1898,	2	697	+266	......
1899,	2	746	+49	......
1900,	2	616	—130	......
1901,	2	799	+183	+398
SAWS, EDGE TOOLS, ETC.				
1892,	5	2,448	......	......
1893,	5	2,210	—238	......
1894,	5	1,965	—245	......
1895,	5	2,188	+223	......
1896,	5	2,171	—17	......
1897,	5	2,126	—45	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
SAWS, EDGE TOOLS, ETC.—Continued.				
1898,	5	2,549	+423	......
1899,	5	3,079	+530	......
1900,	5	3,168	+89	......
1901,	5	3,360	+192	+912
METAL AND METALLIC GOODS.				
1892,	8	1,726	......	......
1893,	8	1,622	—104	......
1894,	8	1,500	—122	......
1895,	8	1,704	+204	......
1896,	8	1,640	—64	......
1897,	8	1,515	—125	......
1898,	8	1,609	+94	......
1899,	8	1,809	+200	......
1900,	8	1,628	—181	......
1901,	8	1,622	—6	—104
LOCOMOTIVES AND ENGINES.				
1892,	14	11,591	......	......
1893,	14	11,644	+53	......
1894,	14	8,441	—3,203	......
1895,	14	9,363	+922	......
1896,	14	10,228	+865	......
1897,	14	10,038	—190	......
1898,	14	12,397	+2,359	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
LOCOMOTIVES AND ENGINES—Continued.				
1899,	14	14,795	+2,398	......
1900,	14	17,523	+2,728	......
1901,	14	19,058	+1,535	+7,467
ENGINES AND BOILERS.				
1892,	6	1,635	......	......
1893,	6	1,384	—251	......
1894,	6	992	—392	......
1895,	6	1,226	+234	......
1896,	6	1,326	+100	......
1897,	6	1,205	—121	......
1898,	6	1,269	+64	......
1899,	6	1,409	+140	......
1900,	6	1,592	+183	......
1901,	6	1,701	+109	+66
BOILERS.				
1892,	7	762	......	......
1893,	7	722	—40	......
1894,	7	691	—31	......
1895,	7	694	+3	......
1896,	7	747	+53	......
1897,	7	652	—95	......
1898,	7	810	+158	......
1899,	7	512	—298	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
BOILERS—Continued.				
1900,	7	618	+106	......
1901,	7	708	+90	—54
BRIDGES.				
1892,	4	1,217	......	......
1893,	4	971	—246	......
1894,	4	647	—324	......
1895,	4	970	+323	......
1896,	4	738	—232	......
1897,	4	630	—108	......
1898,	4	757	+127	......
1899,	4	975	+218	......
1900,	4	1,492	+517	......
1901,	4	1,459	—33	+242
CAR SPRINGS.				
1892,	1	207	......	......
1893,	1	187	—20	......
1894,	1	108	—79	......
1895,	1	107	—1	......
1896,	1	115	+8	......
1897,	1	125	+10	.....
1898,	1	140	+15	......
1899,	1	177	+37	......
1900,	1	174	—3	......
1901,	1	178	+4	—29

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CAR COUPLERS.				
1892,	1	663	......	......
1893,	1	570	—93	......
1894,	1	416	—154	......
1895,	1	606	—190	......
1896,	1	976	+370	......
1897,	1	813	—163	......
1898,	1	783	—30	......
1899,	1	905	+122	......
1900,	1	875	—30	......
1901,	1	810	—65	+147
CARS AND CAR WHEELS.				
1892,	8	3,566	......	......
1893,	8	3,144	—422	......
1894,	8	2,830	—314	......
1895,	8	2,887	+57	......
1896,	8	2,841	—46	......
1897,	8	2,661	—180	......
1898,	8	3,572	+911	......
1899,	8	3,184	—388	......
1900,	8	3,260	+76	......
1901,	8	3,334	+74	—232
WINDOW GLASS, BOTTLE AND TABLE GOODS.				
1892,	17	6,512	......	......
1893,	17	5,993	—519	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WINDOW GLASS, BOTTLE AND TABLE GOODS—Continued.				
1894,	17	5,152	—841	......
1895,	17	6,195	+1,043	......
1896,	17	4,868	—1,327	......
1897,	17	4,993	+125	......
1898,	17	5,572	+579	......
1899,	17	5,979	+407	......
1900,	17	5,732	—247	......
1901,	17	5,367	—365	—1,145
SHIP BUILDING.				
1892,	1	440	......	......
1893,	1	583	+143	......
1894,	1	395	—188	......
1895,	1	336	—59	......
1896,	1	516	+180	......
1897,	1	388	—128	......
1898,	1	810	+422	......
1899,	1	915	+105	......
1900,	1	900	—15	......
1901,	1	731	—169	+291
PIANOS AND ORGANS.				
1892,	2	162	......	......
1893,	2	162	......	......
1894,	2	162	......	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PIANOS AND ORGANS—Continued.				
1895,	2	142	—20	......
1896,	2	126	—16	......
1897,	2	125	—1	......
1898,	2	127	+2	......
1899,	2	120	—7	......
1900,	2	171	+51	......
1901,	2	171	......	+9
RUBBER BOOTS AND SHOES.				
1892,	1	325	......	......
1893,	1	350	+25	......
1894,	1	350	......	......
1895,	1	398	+48	......
1896,	1	359	—39	......
1897,	1	375	+16	......
1898,	1	400	+25	......
1899,	1	500	+100	......
1900,	1	500	......	......
1901,	1	513	+13	+188
CARBONS.				
1892,	1	48	......	......
1893,	1	50	+2	......
1894,	1	55	+5	......
1895,	1	49	—6	......
1896,	1	50	+1	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CARBONS—Continued.				
1897,	1	50	......	......
1898,	1	50	......	......
1899,	1	38	—12	......
1900,	1	37	—1	......
1901,	(1	38	+1	—10
CARPETS.				
1892,	24	6,750	......	......
1893,	24	5,660	—1,090	......
1894,	24	5,326	—334	......
1895,	24	5,907	+581	......
1896,	24	5,362	—545	......
1897,	24	5,496	+134	......
1898,	24	5,123	—373	......
1899,	24	6,178	+1,055	......
1900,	24	5,803	—375	......
1901,	24	5,956	+153	—794
WOOLEN YARNS.				
1892,	10	1,865	......	......
1893,	10	1,471	—394	......
1894,	10	1,148	—323	......
1895,	10	1,616	+468	......
1896,	10	1,331	—285	......
1897,	10	1,476	+145	......
1898,	10	1,513	+37	......
1899,	10	1,706	+193	......
1900,	10	2,128	+422	......
1901,	10	1,959	—169	+94

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
COTTON YARNS.				
1892,	3	259	......	......
1893,	3	233	—26	......
1894,	3	270	+37	......
1895,	3	294	+24	......
1896,	3	220	—74	......
1897,	3	255	+35	......
1898,	3	267	+12	......
1899,	3	264	—3	......
1900,	3	275	+11	......
1901,	3	257	—18	—2
WORSTED YARNS.				
1892,	3	1,002	......	......
1893,	3	708	—294	......
1894,	3	722	+14	......
1895,	3	1,006	+284	......
1896,	3	665	—341	......
1897,	3	728	+63	......
1898,	3	713	—15	......
1899,	3	838	+125	......
1900,	3	796	—42	......
1901,	3	849	+53	—153
MISCELLANEOUS YARNS.				
1892,	9	544	......	......
1893,	9	477	—67	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
MISCELLANEOUS YARNS—Continued.				
1894,	9	418	—59	......
1895,	9	445	+27	......
1896,	9	378	—67	......
1897,	9	422	+44	......
1898,	9	393	—29	......
1899,	9	453	+60	......
1900,	9	374	—79	......
1901,	9	381	+7	—163
WOOLEN GOODS.				
1892,	16	5,573	......	......
1893,	16	4,926	—647	......
1894,	16	4,856	—70	......
1895,	16	5,405	+549	......
1896,	16	3,933	—1,472	......
1897,	16	4,121	+188	......
1898,	16	4,136	+15	......
1899,	16	4,350	+214	......
1900,	16	4,520	+170	......
1901,	16	4,544	+24	—1,029
COTTON GOODS.				
1892,	17	4,308	......	......
1893,	17	3,874	—434	......
1894,	17	3,687	—187	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
COTTON GOODS—Continued.				
1895,	17	3,925	+238	......
1896,	17	3,894	—31	......
1897,	17	4,173	+279	......
1898,	17	4,246	+73	......
1899,	17	4,296	+50	......
1900,	17	4,013	—283	......
1901,	17	3,850	—163	—458
COTTON AND WOOLEN GOODS.				
1892,	12	1,397	......	......
1893,	12	1,260	—137	......
1894,	12	1,248	—12	......
1895,	12	1,370	+122	......
1896,	12	1,182	—188	......
1897,	12	1,162	—20	......
1898,	12	1,320	+158	......
1899,	12	1,262	—58	......
1900,	12	1,199	—63	......
1901,	12	1,165	—34	—232
WORSTED GOODS.				
1892,	3	661	......	......
1893,	3	386	—275	......
1894,	3	461	+75	......
1895,	3	547	+86	......
1896,	3	389	—158	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WORSTED GOODS—Continued.				
1897,	3	610	+221	......
1898,	3	583	—27	......
1899,	3	597	+14	......
1900,	3	450	—147	......
1901,	3	416	—34	—245
KNIT GOODS.				
1892,	5	989	......	......
1893,	5	973	—16	......
1894,	5	807	—166	......
1895,	5	1,051	+244	......
1896,	5	973	—78	......
1897,	5	1,010	+37	......
1898,	5	980	—30	......
1899,	5	1,004	+24	......
1900,	5	1,268	+264	......
1901,	5	1,064	—204	+75
CHENILLE GOODS.				
1892,	5	1,577	......	......
1893,	5	1,153	—424	......
1894,	5	1,176	+23	......
1895,	5	1,189	+13	......
1896,	5	1,378	+189	......
1897,	5	1,542	+164	......
1898,	5	1,575	+33	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CHENILLE GOODS—Continued.				
1899,	5	1,614	+39	......
1900,	5	1,463	—151	......
1901,	5	1,492	+29	—85
MIXED TEXTILES.				
1892,	9	2,024	......	......
1893,	9	1,688	—336	......
1894,	9	1,847	+159	......
1895,	9	2,028	+181	......
1896,	9	1,894	—134	......
1897,	9	2,025	+131	......
1898,	9	2,120	+95	......
1899,	9	2,431	+311	......
1900.	9	2,783	+352	......
1901,	9	2,644	—139	+620
TAPESTRY AND TABLE COVERS.				
1892,	3	225	......	......
1893,	3	187	—38	......
1894,	3	229	+42	......
1895,	3	326	+97	......
1896,	3	296	—30	......
1897,	3	393	+97	......
1898,	3	462	+69	......
1899,	3	492	+30	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
TAPESTRY AND TABLE COVERS--Continued.				
1900,	3	470	—22	......
1901,	3	316	—154	+91
HOSIERY.				
1892,	13	2,944	......	......
1893,	13	2,647	—297	......
1894,	13	2,589	—58	......
1895,	13	3,329	+740	......
1896,	13	2,708	—621	......
1897,	13	3,012	+304	......
1898,	13	3,212	+200	......
1899,	13	3,204	—8	......
1900,	13	3,116	—88	......
1901,	13	2,900	—216	—44
HOSIERY AND KNIT GOODS.				
1892,	3	595	......	......
1893,	3	610	+15	......
1894,	3	600	—10	......
1895,	3	628	+28	......
1896,	3	453	—175	......
1897,	3	538	+85	......
1898,	3	471	—67	......
1899,	3	456	—15	......
1900,	3	520	+64	......
1901,	3	478	—42	—117

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF PERSONS EMPLOYED, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
SILK BROAD GOODS.				
1892,	4	1,736	......	......
1893,	4	1,092	—644	......
1894,	4	1,446	+354	......
1895,	4	1,918	+472	......
1896,	4	1,850	—68	......
1897,	4	2,667	+817	......
1898,	4	2,964	+297	......
1899,	4	3,191	+227	......
1900,	4	3,070	—121	......
1901,	4	3,285	+215	+1,549

AGGREGATE WAGES PAID.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

(In this table the aggregate wages paid by the same establishments for each of the years 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1892. Forty-four industries, representing 354 establishments, are considered.)

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PIG IRON.				
1892,	13	$1,222,091	....	$
1893,	13	968,289	—$253,802	....
1894,	13	658,393	—309,896	....
1895,	13	1,060,012	+401,619	....
1896,	13	947,503	—112,509	....
1897,	13	797,839	—149,664	....
1898,	13	950,759	+152,920	....
1899,	13	1,502,193	+551,434	....
1900,	13	1,393,893	—108,300	....
1901,	13	1,418,147	+24,254	+196,056
ROLLING MILLS—GENERAL PRODUCT.				
1892,	32	19,909,005	....	....
1893,	32	17,884,919	—2,024,086	....
1894,	32	14,537,538	—3,347,381	....
1895,	32	17,620,324	+3,082,786	....
1896,	32	17,829,462	+209,138	....
1897,	32	17,159,786	—669,676	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
ROLLING MILLS—GENERAL PRODUCT—Continued.				
1898,	32	$20,005,631	+$2,845,845	$
1899,	32	26,368,594	+6,362,963	....
1900,	32	18,725,089	—7,643,505	....
1901,	32	26,800,981	+8,075,892	+6,891,976
IRON AN STEEL SHEETS AND PLATES.				
1892,	14	3,225,444	....	....
1893,	14	2,658,514	—566,930	....
1894,	14	2,251,379	—407,135	....
1895,	14	2,728,209	+476,830	....
1896,	14	2,390,653	—337,556	....
1897,	14	2,569,347	+178,694	....
1898,	14	3,402,674	+833,327	....
1899,	14	4,781,188	+1,378,514	....
1900,	14	4,387,581	—393,607	....
1901,	14	5,458,771	+1,071,190	+2,233,327
PLATE AND BAR.				
1892,	3	1,685,275	....	....
1893,	3	1,150,276	—534,999	....
1894,	3	696,970	—453,306	....
1895,	3	864,145	+167,175	....
1896,	3	596,165	—267,980	....
1897,	3	626,280	+30,115	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PLATE AND BAR—Continued.				
1898,	3	$1,082,343	+$456,063	$
1899,	3	1,391,372	+309,029	....
1900,	3	1,190,369	—201,003	....
1901,	3	1,022,587	—167,782	—662,688
STEEL.				
1892,	13	6,601,181	....	....
1893,	13	5,234,148	—1,367,033	....
1894,	13	4,492,128	—742,020	....
1895,	13	5,872,084	+1,379,956	....
1896,	13	4,592,017	—1,028,067	....
1897,	13	4,918,524	+326,507	....
1898,	13	5,828,123	+909,599	....
1899,	13	7,540,393	+1,712,270	....
1900,	13	4,870,336	—2,670,057	....
1901,	13	9,717,909	+4,847,573	+3,116,728
ARCHITECTURAL CAST AND WROUGHT IRON WORK.				
1892,	4	810,020	....	....
1893,	4	699,209	—110,811	....
1894,	4	488,190	+211,019	....
1895,	4	786,657	+298,467	....
1896,	4	718,716	—67,941	....
1897,	4	597,775	—120,941	....
1898,	4	771,191	+173,416	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
ARCHITECTURAL CAST AND WROUGHT IRON WORK—Continued.				
1899,	4	$971,114	+$199,923	$
1900,	4	1,264,962	+293,848	....
1901,	4	1,408,076	+143,114	+598,056
IRON FORGING.				
1892,	4	379,070	....	....
1893,	4	302,651	—76,419	....
1894,	4	237,457	—65,194	....
1895,	4	311,275	+73,818	....
1896,	4	295,092	—16,183	....
1897,	4	281,250	—13,842	....
1898,	4	365,737	+84,487	....
1899,	4	373,752	+8,015	....
1900,	4	115,518	—258,234	....
1901,	4	118,476	+2,958	—260,594
NAILS AND SPIKES.				
1892,	10	1,294,034	....	....
1893,	10	1,130,151	—163,883	....
1894,	10	770,354	—359,797	....
1895,	10	848,142	+77,778	....
1896,	10	527,201	—320,941	....
1897,	10	593,927	+66,726	....
1898,	10	556,145	—37,782	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
NAILS AND SPIKES—Continued.				
1899,	10	$800,175	+$244,030	$
1900,	10	928,737	+128,562	....
1901,	10	712,083	—216,654	—581,951
NUTS AND BOLTS.				
1892,	2	238,112	....	....
1893,	2	235,777	—2,335	....
1894,	2	208,854	—26,923	....
1895,	2	257,202	+48,348	....
1896,	2	211,195	—46,007	....
1897,	2	200,064	—11,131	....
1898,	2	291,593	+91,529	....
1899,	2	520,681	+229,088	....
1900,	2	550,577	+29,896	....
1901,	2	414,917	—135,660	+176,805
PIPES AND TUBES.				
1892,	4	575,531	....	....
1893,	4	519,129	—56,402	....
1894,	4	513,268	—5,861	....
1895,	4	646,083	+132,815	....
1896,	4	658,449	+12,366	....
1897,	4	642,407	—16,042	....
1898,	4	769,577	+127,170	....
1899,	4	831,654	+62,077	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PIPES AND TUBES—Continued.				
1900,	4	$1,013,349	+$181,695	$
1901,	4	1,231,972	+218,623	+656,441
IRON FOUNDRIES AND MACHINE WORKS.				
1892,	25	1,967,645	....	....
1893,	25	1,533,465	—434,180	....
1894,	25	1,313,309	—220,156	....
1895,	25	1,571,056	+257,747	....
1896,	25	1,384,299	—186,757	....
1897,	25	1,513,104	+128,805	....
1898,	25	1,800,212	+287,108	....
1899,	25	2,198,285	+398,073	....
1900,	25	2,312,981	+114,696	....
1901,	25	2,540,406	+227,425	+572,761
STOVES, RANGES, HEATERS, ETC.				
1892,	9	630,622	....	....
1893,	9	674,514	+43,892	....
1894,	9	526,222	—148,292	....
1895,	9	575,802	+49,580	....
1896,	9	559,614	—16,188	....
1897,	9	574,595	+14,981	....
1898,	9	595,133	+20,538	....
1899,	9	635,413	+40,280	....
1900,	9	660,164	+24,751	....
1901,	9	663,735	+3,571	+33,113

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
HARDWARE.				
1892,	4	$608,700	$	$
1893,	4	581,468	—27,232	....
1894,	4	494,538	—86,930	....
1895,	4	589,411	+94,873	....
1896,	4	506,748	—82,663	....
1897,	4	555,295	+48,547	....
1898,	4	575,798	+20,503	....
1899,	4	753,877	+178,079	....
1900,	4	568,061	—185,816	....
1901,	4	698,125	+130,064	+89,425
MALLEABLE IRON.				
1892,	2	207,159	....	....
1893,	2	167,644	—39,515	....
1894,	2	129,634	—38,010	....
1895,	2	185,490	+55,856	....
1896,	2	206,976	+21,486	....
1897,	2	208,714	+1,738	....
1898,	2	341,962	+133,248	....
1899,	2	389,287	+47,325	....
1900,	2	335,124	—54,163	....
1901,	2	441,888	+106,764	+234,729
SAWS, EDGE TOOLS, ETC.				
1892,	5	1,306,442	....	....
1893,	5	1,166,262	—140,180	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
SAWS, EDGE TOOLS, ETC—Continued.				
1894,	5	$872,555	—$293,707	$
1895,	5	1,078,514	+205,959	....
1896,	5	1,083,069	+4,555	....
1897,	5	988,912	—94,157	....
1898,	5	1,273,829	+284,917	....
1899,	5	1,583,828	+309,999	....
1900,	5	1,682,130	+98,302	....
1901,	5	1,772,047	+89,917	+465,605
METAL AND METALLIC GOODS.				
1892,	8	833,385	....	....
1893,	8	738,036	—95,349	....
1894,	8	675,524	—62,512	....
1895,	8	829,877	+154,353	....
1896,	8	812,633	—17,244	....
1897,	8	712,676	—99,957	....
1898,	8	762,480	+49,804	....
1899,	8	896,108	+133,628	....
1900,	8	837,203	—58,905	....
1901,	8	824,729	—12,474	—8,656
LOCOMOTIVES AND ENGINES.				
1892,	14	6,941,946	....	....
1893,	14	6,528,803	—413,143	....
1894,	14	4,032,489	—2,496,314	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
LOCOMOTIVES AND ENGINES—Continued.				
1895,	14	$5,231,956	+$1,199,467	$
1896,	14	5,402,517	+170,561	....
1897,	14	5,398,050	—4,467	....
1898,	14	7,149,884	+1,751,834	....
1899,	14	8,797,896	+1,648,012	....
1900,	14	10,657,939	+1,860,043	....
1901,	14	11,930,091	+1,272,152	+4,988,145
ENGINES AND BOILERS.				
1892,	6	820,391	....	....
1893,	6	658,487	—161,904	....
1894,	6	521,260	—137,227	....
1895,	6	647,889	+126,629	....
1896,	6	647,307	—582	....
1897,	6	552,180	—95,127	....
1898,	6	639,408	+87,228	....
1899,	6	728,062	+88,654	....
1900,	6	838,696	+110,634	....
1901,	6	903,156	+64,460	+82,765
BOILERS.				
1892,	7	394,594	....	....
1893,	7	285,385	—109,209	....
1894,	7	220,692	—64,693	....
1895,	7	253,044	+32,352	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
BOILERS—Continued.				
1896,	7	$231,665	—$21,379	$
1897,	7	236,863	+5,198	....
1898,	7	298,175	+61,312	....
1899,	7	237,840	—60,335	....
1900,	7	291,905	+54,065	....
1901,	7	342,918	+51,013	—51,676
BRIDGES.				
1892,	4	532,673	....	....
1893,	4	413,517	—119,156	....
1894,	4	262,240	—151,277	....
1895,	4	450,391	+188,151	....
1896,	4	293,005	—157,386	....
1897,	4	275,270	—17,735	....
1898,	4	333,277	+58,007	....
1899,	4	408,803	+75,526	....
1900,	4	847,340	+438,537	....
1901,	4	807,450	—39,890	+274,777
CAR SPRINGS.				
1892,	1	139,800	....	....
1893,	1	104,498	—35,302	....
1894,	1	49,664	—54,834	....
1895,	1	67,556	+17,892	....
1896,	1	76,031	+8,475	....
1897,	1	69,144	—6,887	....
1898,	1	95,162	+26,018	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
CAR SPRINGS—Continued.				
1899,	1	$129,115	+$33,953	$
1900,	1	136,336	+7,221	....
1901,	1	146,451	+10,115	+6,651
CAR COUPLERS.				
1892,	1	361,338	....	....
1893,	1	281,375	—79,963	....
1894,	1	160,978	—120,397	....
1895,	1	304,785	+143,807	....
1896,	1	436,177	+131,392	....
1897,	1	371,800	—64,377	....
1898,	1	351,902	—19,898	....
1899,	1	449,000	+97,098	....
1900,	1	441,925	—7,075	....
1901,	1	393,000	—48,925	+31,662
CARS AND CAR WHEELS.				
1892,	8	1,901,062	....	....
1893,	8	1,579,523	—321,539	....
1894,	8	1,292,310	—287,213	....
1895,	8	1,533,033	+240,723	....
1896,	8	1,363,150	—169,883	....
1897,	8	1,335,463	—27,687	....
1898,	8	1,912,759	+577,296	....
1899,	8	1,763,251	—149,508	....
1900,	8	1,827,031	+63,780	....
1901,	8	1,880,715	+53,684	—20,347

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WINDOW GLASS, BOTTLE AND TABLE GOODS.				
1892,	17	$3,013,108	$	$
1893,	17	2,209,369	—803,739	....
1894,	17	2,219,127	+9,758	....
1895,	17	2,198,916	—20,211	....
1896,	17	1,903,683	—295,233	....
1897,	17	2,257,805	+354,122	....
1898,	17	2,525,933	+268,128	....
1899,	17	2,726,527	+200,594	....
1900,	17	2,470,306	—256,221	....
1901,	17	2,471,234	+928	—541,874
SHIP BUILDING.				
1892,	1	242,358	....	....
1893,	1	324,439	+82,081	....
1894,	1	226,858	—97,581	....
1895,	1	190,820	—36,038	....
1896,	1	285,103	+94,283	....
1897,	1	215,604	—69,499	....
1898,	1	397,489	+181,885	....
1899,	1	483,200	+85,711	....
1900,	1	449,335	—33,865	....
1901,	1	365,911	—83,424	+123,553

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PIANOS AND ORGANS.				
1892,	2	$53,972	$	$
1893,	2	50,583	—3,389	....
1894,	2	46,187	—4,396	....
1895,	2	49,644	+3,457	....
1896,	2	51,392	+1,748	....
1897,	2	52,502	+1,110	....
1898,	2	54,027	+1,525	....
1899,	2	53,303	—724	....
1900,	2	72,290	+18,987	....
1901,	2	74,851	+2,561	+20,879
RUBBER BOOTS AND SHOES.				
1892,	1	141,784	....	....
1893,	1	145,471	+3,687	....
1894,	1	128,156	—17,315	....
1895,	1	150,705	+22,549	....
1896,	1	131,577	—19,128	....
1897,	1	103,639	—27,938	....
1898,	1	139,770	+36,131	....
1899,	1	175,876	+36,106	....
1900,	1	174,134	—1,742	....
1901,	1	182,887	+8,753	+41,103
CARBONS.				
1892,	1	25,000	....	....
1893,	1	27,000	+2,000	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CARBONS—Continued.				
1894,	1	$29,000	+$2,000	$
1895,	1	28,000	—1,000	....
1896,	1	24,000	—4,000	....
1897,	1	24,000	....	....
1898,	1	24,000	....	....
1899,	1	20,240	—3,760	....
1900,	1	18,559	—1,681	....
1901,	1	19,394	+835	—5,606
CARPETS.				
1892,	24	2,573,458	....	....
1893,	24	2,085,404	—488,054	....
1894,	24	1,002,657	—1,082,747	....
1895,	24	2,228,021	+1,225,364	....
1896,	24	1,830,621	—397,400	....
1897,	24	1,983,366	+152,745	....
1898,	24	1,824,963	—158,403	....
1899,	24	2,307,694	+482,731	....
1900,	24	2,232,351	—75,343	....
1901,	24	2,321,117	+88,766	—252,341
WOOLEN YARNS.				
1892,	10	527,864	....	....
1893,	10	428,848	—99,016	....
1894,	10	286,557	—142,291	....
1895,	10	424,006	+137,449	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895. 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WOOLEN YARNS—Continued.				
1896,	10	$408,385	—$15,621	$
1897,	10	384,803	—23,582	....
1898,	10	461,866	+77,063	....
1899,	10	524,527	+62,661	....
1900,	10	656,246	+131,719	....
1901,	10	610,422	—45,824	+82,558
COTTON YARNS.				
1892,	3	84,571	....	....
1893,	3	71,384	—13,187	....
1894,	3	70,983	—401	....
1895,	3	89,806	+18,823	....
1896,	3	63,476	—26,330	....
1897,	3	78,009	+14,533	....
1898,	3	82,051	+4,042	....
1899,	3	87,040	+4,989	....
1900,	3	93,589	+6,549	....
1901,	3	88,159	—5,430	+3,588
WORSTED YARNS.				
1892,	3	298,181	....	....
1893,	3	211,833	—86,348	....
1894,	3	201,584	—10,249	....
1895,	3	278,890	+77,306	....
1896,	3	157,080	—121,810	....
1897,	3	201,321	+44,241	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WORSTED YARNS—Continued.				
1898,	3	$175,310	—$26,011	$
1899,	3	239,566	+64,256	....
1900,	3	235,574	—3,992	....
1901,	3	238,632	+3,058	—59,549
MISCELLANEOUS YARNS.				
1892,	9	212,052	....	....
1893,	9	150,765	—61,287	....
1894,	9	138,072	—12,693	....
1895,	9	159,564	+21,492	....
1896,	9	130,224	—29,340	....
1897,	9	156,864	+26,640	....
1898,	9	133,248	—23,616	....
1899,	9	171,356	+38,108	....
1900,	9	150,158	—21,198	....
1901,	9	156,599	+6,441	—55,453
WOOLEN GOODS.				
1892,	16	1,953,364	....	....
1893,	16	1,527,984	—425,380	....
1894,	16	1,388,781	—139,203	....
1895,	16	1,694,440	+305,659	....
1896,	16	1,199,111	—495,329	....
1897,	16	1,363,041	+163,930	....
1898,	16	1,384,116	+21,075	....
1899,	16	1,498,231	+114,115	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WOOLEN GOODS—Continued.				
1900,	16	$1,640,171	+$141,940	$
1901,	16	1,610,162	—30,009	—343,202
COTTON GOODS.				
1892,	17	1,656,805	....	....
1893,	17	1,186,610	—470,195	....
1894,	17	1,171,554	—15,056	....
1895,	17	1,303,844	+132,290	....
1896,	17	1,064,130	—239,714	....
1897,	17	1,251,253	+187,123	....
1898,	17	1,373,237	+121,984	....
1899,	17	1,508,218	+134,981	....
1900,	17	1,367,545	—140,673	....
1901,	17	1,357,230	—10,315	—299,575
COTTON AND WOOLEN GOODS.				
1892,	12	483,504	....	....
1893,	12	390,597	—92,907	....
1894,	12	362,164	—28,433	....
1895,	12	420,075	+57,911	....
1896,	12	338,900	—81,175	....
1897,	12	359,586	+20,686	....
1898,	12	416,500	+56,914	....
1899,	12	407,698	—8,802	....
1900,	12	388,539	—19,159	....
1901,	12	362,067	—26,472	—121,437

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WORSTED GOODS.				
1892,	3	$239,858	$	$
1893,	3	135,561	—104,297	....
1894,	3	158,743	+23,182	....
1895,	3	192,633	+33,890	....
1896,	3	132,290	—60,343	....
1897,	3	256,513	+124,223	....
1898,	3	244,146	—12,367	....
1899,	3	242,183	—1,963	....
1900,	3	186,074	—56,109	....
1901,	3	173,828	—12,246	—66,030
KNIT GOODS.				
1892,	5	286,648	....	....
1893,	5	255,438	—31,210	....
1894,	5	205,732	—49,706	....
1895,	5	288,841	+83,109	....
1896,	5	228,053	—60,788	....
1897,	5	247.615	+19,562	....
1898,	5	247,184	—431	....
1899,	5	288,434	+41,250	....
1900,	5	316,613	+28,179	....
1901,	5	245,641	—70,972	—41,007
CHENILLE GOODS.				
1892,	5	648,492	....	....
1893,	5	435,761	—212,731	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CHENILLE GOODS—Continued.				
1894,	5	$442,828	+$7,067	$
1895,	5	460,319	+17,491	....
1896,	5	501,772	+41,453	....
1897,	5	575,861	+74,089	....
1898,	5	561,012	—14,849	....
1899,	5	679,963	+118,951	....
1900,	5	588,939	—91,024	....
1901,	5	625,897	+36,958	—22,595
MIXED TEXTILES.				
1892,	9	712,059	....	....
1893,	9	520,683	—191,376	....
1894,	9	531,680	+10,997	....
1895,	9	615,095	+83,415	....
1896,	9	559,443	—55,652	....
1897,	9	591,656	+32,213	....
1898,	9	632,258	+40,602	....
1899,	9	765,896	+133,638	....
1900,	9	857,228	+91,332	....
1901,	9	830,012	—27,216	+117,953
TAPESTRY AND TABLE COVERS.				
1892,	3	94,620	....	....
1893,	3	68,484	—26,136	....
1894,	3	91,722	+23,238	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
TAPESTRY AND TABLE COVERS—Continued.				
1895,	3	$124,723	+$33,001	$
1896,	3	115,266	—9,457	....
1897,	3	161,275	+46,009	....
1898,	3	180,225	+18,950	....
1899,	3	189,321	+9,096	....
1900,	3	196,420	+7,099	....
1901.	3	134,625	—61,795	+40,005
HOSIERY.				
1892,	13	770,891	....	....
1893,	13	660,803	—110,088	....
1894,	13	567,411	—93,392	....
1895,	13	863,884	+296,473	....
1896,	13	632,065	—231,819	....
1897,	13	773,370	+141,305	....
1898,	13	807,402	+34,032	....
1899,	13	809,834	+2,432	....
1900,	13	839,341	+29,507	....
1901,	13	793,487	—45,854	+22,596
HOSIERY AND KNIT GOODS.				
1892,	3	197,312	....	....
1893,	3	186,860	—10,452	....
1894,	3	191,806	+4,946	....
1895,	3	179,494	—12,312	....
1896,	3	105,220	—74,274	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate amount of wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
HOSIERY AND KNIT GOODS—Continued.				
1897,	3	$148,908	+$43,688	$
1898,	3	134,120	—14,788	....
1899,	3	142,663	+8,543	....
1900,	3	151,853	+9,190	....
1901,	3	147,857	—3,996	—49,455
SILK BROAD GOODS.				
1892,	4	430,455	....	....
1893,	4	248,372	—182,083	....
1894,	4	362,119	+113,747	....
1895,	4	449,854	+87,735	....
1896,	4	470,930	+21,076	....
1897,	4	632,685	+161,755	....
1898,	4	724,004	+91,319	....
1899,	4	805,682	+81,678	....
1900,	4	734,974	—70,708	....
1901,	4	761,327	+26,353	+330,872

AVERAGE YEARLY EARNINGS.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

(In this table the average yearly earnings in same establishments for each of the years 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 and 1901 presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1892. Forty-four industries, representing 354 establishments, are considered.)

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PIG IRON.				
1892,	13	$477 92	$	$
1893,	13	446 14	—31 78	......
1894,	13	382 09	—64 05	......
1895,	13	483 66	+101 57	......
1896,	13	422 61	—61 05	....
1897,	13	419 03	—3 58	......
1898,	13	447 63	+28 60	......
1899,	13	498 24	+50 61	......
1900,	13	455 97	—42 27	......
1901,	13	576 72	+120 75	+98 80
ROLLING MILLS—GENERAL PRODUCT.				
1892,	32	562 91	......	......
1893,	32	547 02	—15 89	......
1894,	32	482 65	—64 37	......
1895,	32	501 65	+19 00	......
1896,	32	513 00	+11 35	......
1897,	32	482 30	—30 70	......
1898,	32	497 96	+15 66	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
ROLLING MILLS—GENERAL PRODUCT—Continued.				
1899,	32	$605 72	+$107 76	$
1900,	32	626 82	+21 10	......
1901,	32	692 10	+65 28	+129 19
IRON AND STEEL SHEETS AND PLATES.				
1892,	14	633 81	......	......
1893,	14	579 19	—54 62	......
1894,	14	524 31	—54 88	......
1895,	14	560 32	+36 01	......
1896,	14	528 67	—31 65	......
1897,	14	493 63	—35 04	......
1898,	14	521 56	+27 93	......
1899,	14	574 18	+52 62	......
1900,	14	556 52	—17 66	......
1901,	14	577 28	+20 76	—56 53
PLATE AND BAR.				
1892,	3	515 53	......	......
1893,	3	493 68	—21 85	......
1894,	3	401 71	—91 97	......
1895,	3	381 86	—19 85	......
1896,	3	460 36	+78 50	......
1897,	3	460 50	+14	......
1898,	3	456 30	—4 20	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PLATE AND BAR—Continued.				
1899,	3	$513 21	+$56 91	$
1900,	3	432 55	—80 66	......
1901,	3	641 12	+208 57	+125 59
STEEL.				
1892,	13	504 87	......	......
1893,	13	494 49	—10 38	......
1894,	13	459 41	—35 08	......
1895,	13	483 78	+24 37	......
1896,	13	456 55	—27 23	......
1897,	13	474 71	+18 16	......
1898,	13	478 66	+3 95	......
1899,	13	517 24	+38 58	......
1900,	13	598 47	+81 23	......
1901,	13	555 94	—42 53	+51 07
ARCHITECTURAL CAST AND WROUGHT IRON WORKS.				
1892,	4	600 01	......	......
1893,	4	581 70	—18 31	......
1894,	4	500 19	—81 51	......
1895,	4	547 05	+46 86	......
1896,	4	553 71	+6 66	......
1897,	4	550 44	—3 27	......
1898,	4	537 42	—13 02	......
1899,	4	553 34	+15 92	......
1900,	4	545 01	—8 33	......
1901,	4	541 36	—3 65	—58 65

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
IRON FORGING.				
1892,	4	$650 21	$	$
1893,	4	596 95	—53 26	......
1894,	4	506 31	—90 64	......
1895,	4	524 03	+17 72	......
1896,	4	518 62	—5 41	......
1897,	4	527 67	+9 05	......
1898,	4	547 51	+19 84	......
1899,	4	557 84	+10 33	......
1900,	4	717 50	+159 66	......
1901,	4	740 47	+22 97	+90 26
NAILS AND SPIKES.				
1892,	10	429 19	......	......
1893,	10	397 94	—31 25	......
1894,	10	334 21	—63 73	......
1895,	10	350 18	+15 97	......
1896,	10	278 79	—71 39	......
1897,	10	346 52	+67 73	......
1898,	10	264 96	—81 56	......
1899,	10	339 06	+74 10	......
1900,	10	350 86	+11 80	......
1901,	10	443 11	+92 25	+13 92
NUTS AND BOLTS.				
1892,	2	387 17	......	......
1893,	2	339 24	—47 93	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
NUTS AND BOLTS—Continued.				
1894,	2	$372 95	+$33 71	$
1895,	2	403 13	+30 18	......
1896,	2	398 48	—4 65	......
1897,	2	347 33	—51 15	......
1898,	2	384 69	+37 36	......
1899,	2	545 22	+160 53	......
1900,	2	434 21	—111 01	......
1901,	2	406 38	—27 83	+19 21
PIPES AND TUBES.				
1892,	4	430 78	......	......
1893,	4	395 98	—34 80	......
1894,	4	406 38	+10 40	......
1895,	4	444 34	+37 96	......
1896,	4	421 15	—23 19	......
1897,	4	473 40	+52 25	......
1898,	4	477 41	+4 01	......
1899,	4	483 52	+6 11	......
1900,	4	493 83	+10 31	......
1901,	4	521 14	+27 31	+90 36
IRON FOUNDRIES AND MACHINE WORKS.				
1892,	25	553 64	......	......
1893,	25	495 14	—58 50	......
1894,	25	504 53	+9 39	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
IRON FOUNDRIES AND MACHINE WORKS—Continued.				
1895,	25	$512 41	+$7 88	$
1896,	25	495 45	—16 96	......
1897,	25	504 03	+8 58	......
1898,	25	526 84	+22 81	......
1899,	25	537 35	+10 51	......
1900,	25	562 36	+25 01	......
1901,	25	567 43	+5 07	+13 79
STOVES, RANGES, HEATERS, ETC.				
1892,	9	507 34	......	......
1893,	9	496 33	—11 01	......
1894,	9	425 06	—71 27	......
1895,	9	448 09	+23 03	......
1896,	9	431 80	—16 29	......
1897,	9	448 97	+17 17	......
1898,	9	454 30	+5 33	......
1899,	9	487 28	+32 98	......
1900,	9	504 71	+17 43	......
1901,	9	501 31	—3 40	—6 03
HARDWARE.				
1892,	4	388 94	......	......
1893,	4	376 59	—12 35	......
1894,	4	337 79	—38 80	......
1895,	4	371 63	+33 84	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
HARDWARE—Continued.				
1896,	4	$346 14	—$25 49	$
1897,	4	353 98	+7 84	......
1898,	4	339 70	—14 28	......
1899,	4	391 42	+51 72	......
1900,	4	332 98	—58 44	......
1901,	4	398 70	+65 72	+9 76
MALLEABLE IRON.				
1892,	2	516 61	......	......
1893,	2	463 11	—53 50	......
1894,	2	442 44	—20 67	......
1895,	2	505 42	+62 98	......
1896,	2	465 11	—40 31	......
1897,	2	484 25	+19 14	......
1898,	2	490 62	+6 37	......
1899,	2	521 83	+31 21	......
1900,	2	544 03	+22 20	......
1901,	2	553 05	+9 02	+36 44
SAWS, EDGE TOOLS, ETC.				
1892,	5	533 68	......	......
1893,	5	527 72	—5 96	......
1894,	5	444 05	—83 67	......
1895,	5	538 62	+94 57	......
1896,	5	498 88	—39 74	......
1897,	5	465 15	—33 73	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
SAWS, EDGE TOOLS, ETC.—Continued.				
1898,	5	$499 74	+$34 59	$
1899,	5	514 40	+14 66	......
1900,	5	530 97	+16 57	......
1901,	5	527 39	—3 58	—6 29
METAL AND METALLIC GOODS.				
1892,	8	482 84	......	......
1893,	8	455 02	—27 82	......
1894,	8	450 35	—4 67	......
1895,	8	487 02	+36 67	......
1896,	8	495 51	+8 49	......
1897,	8	470 41	—25 10	......
1898,	8	473 88	+3 47	......
1899,	8	495 36	+21 48	......
1900,	8	514 25	+18 89	......
1901,	8	508 46	—5 79	+25 62
LOCOMOTIVES AND ENGINES.				
1892,	14	598 90	......	......
1893,	14	560 70	—38 20	......
1894,	14	477 72	—82 98	......
1895,	14	558 79	+81 07	......
1896,	14	528 21	—30 58	......
1897,	14	537 76	+9 55	......
1898,	14	576 74	+38 98	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
LOCOMOTIVES AND ENGINES—Continued.				
1899,	14	$594 65	+$17 91	$
1900,	14	608 22	+13 57	......
1901,	14	625 99	+17 77	+27 09
ENGINES AND BOILERS.				
1892,	6	536 72	......	......
1893,	6	510 03	—26 69	......
1894,	6	528 49	+18 46	......
1895,	6	533 66	+5 17	......
1896,	6	488 16	—45 50	......
1897,	6	458 24	—29 92	......
1898,	6	503 87	+45 63	......
1899,	6	516 72	+12 85	......
1900,	6	526 82	+10 10	......
1901,	6	530 96	+4 14	—5 76
BOILERS.				
1892,	7	419 41	......	......
1893,	7	393 67	—25 74	......
1894,	7	319 23	—74 44	......
1895,	7	364 61	+45 38	......
1896,	7	310 13	—54 48	......
1897,	7	363 29	+53 16	......
1898,	7	368 12	+4 83	......
1899,	7	464 53	+96 41	......
1900,	7	472 34	+7 81	......
1901,	7	484 35	+12 01	+64 94

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
BRIDGES.				
1892,	4	$437 69	$	$
1893,	4	425 86	—11 83	......
1894,	4	405 31	—20 55	......
1895,	4	464 32	+59 01	......
1896,	4	397 03	—67 29	......
1897,	4	436 94	+39 91	......
1898,	4	440 26	+3 32	......
1899,	4	419 29	—20 97	......
1900,	4	567 92	+148 63	......
1901,	4	553 43	—14 49	+115 74
CAR SPRINGS.				
1892,	1	675 36	......	......
1893,	1	558 81	—116 55	......
1894,	1	459 85	—98 96	......
1895,	1	631 36	+171 51	......
1896,	1	661 14	+29 78	......
1897,	1	553 15	—7 99	......
1898,	1	679 73	+126 58	......
1899,	1	729 46	+49 73	......
1900,	1	783 54	+54 08	......
1901,	1	822 76	+39 22	+147 40
CAR COUPLERS.				
1892,	1	545 00	......	......
1893,	1	493 64	—51 36	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CAR COUPLERS—Continued.				
1894,	1	$386 96	—$106 68	$
1895,	1	502 94	+115 98	......
1896,	1	446 90	—56 04	......
1897,	1	457 32	+10 42	......
1898,	1	449 43	—7 89	......
1899,	1	496 13	+46 70	......
1900,	1	505 06	+8 93	......
1901,	1	485 19	—19 87	—59 81
CAR AND CAR WHEELS.				
1892,	8	533 11	......	......
1893,	8	502 39	—30 72	......
1894,	8	456 65	—45 74	......
1895,	8	531 01	+74 36	......
1896,	8	479 81	—51 20	......
1897,	8	501 87	+22 06	......
1898,	8	535 49	+33 62	......
1899,	8	553 78	+18 29	......
1900,	8	560 44	+6 66	......
1901,	8	564 10	+3 66	+30 99
WINDOW GLASS, BOTTLE AND TABLE GOODS.				
1892,	17	462 70	......	......
1893,	17	368 66	—94 04	......
1894,	17	430 73	+62 07	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WINDOW GLASS, BOTTLES AND TABLE GOODS—Continued.				
1895,	17	$354 95	—$75 78	$
1896,	17	391 06	+36 11	......
1897,	17	452 19	+61 13	......
1898,	17	453 33	+1 14	......
1899,	17	456 02	+2 69	......
1900,	17	430 97	—25 05	......
1901,	17	460 45	+29 48	—2 25
SHIP BUILDING.				
1892,	1	550 80	......	......
1893,	1	556 49	+5 69	......
1894,	1	574 32	+17 83	......
1895,	1	567 91	—6 41	......
1896,	1	552 52	—15 39	......
1897,	1	555 68	+3 16	......
1898,	1	490 73	—64 95	......
1899,	1	528 09	+37 36	......
1900,	1	499 26	—28 83	......
1901,	1	500 56	+1 30	—50 24
PIANOS AND ORGANS.				
1892,	2	336 16	......	......
1893,	2	312 24	—23 92	......
1894,	2	285 10	—27 14	......
1895,	2	349 61	+64 51	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PIANOS AND ORGANS—Continued.				
1896,	2	$407 87	+$58 26	$
1897,	2	420 02	+12 15	......
1898,	2	425 41	+5 39	......
1899,	2	444 19	+18 78	......
1900,	2	422 75	—21 44	......
1901,	2	437 73	+14 98	+101 57
RUBBER BOOTS AND SHOES.				
1892,	1	436 25	......	......
1893,	1	415 63	—20 62	......
1894,	1	366 16	—49 47	......
1895,	1	378 65	+12 49	......
1896,	1	338 66	—39 99	......
1897,	1	276 37	—62 29	......
1898,	1	349 43	+73 06	......
1899,	1	351 75	+2 32	......
1900,	1	348 27	—3 48	......
1901,	1	356 50	+8 23	—79 75
CARBONS.				
1892,	1	520 83	......	......
1893,	1	540 00	+19 17	......
1894,	1	527 28	—12 72	......
1895,	1	571 43	+44 15	......
1896,	1	480 00	—91 43	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CARBONS—Continued.				
1897,	1	$480 00	$	$
1898,	1	480 00	......	......
1899,	1	532 63	+52 63	......
1900,	1	501 60	—31 03	......
1901,	1	510 37	+8 77	—10 46
CARPETS.				
1892,	24	381 24	......	......
1893,	24	368 45	—12 79	......
1894,	24	355 30	—13 15	......
1895,	24	374 48	+19 18	......
1896,	24	341 41	—33 07	......
1897,	24	360 88	+19 47	......
1898,	24	356 23	—4 65	......
1899,	24	373 53	+17 30	......
1900,	24	384 69	+11 16	......
1901,	24	389 71	+5 02	+8 47
WOOLEN YARNS.				
1892,	10	283 03	......	......
1893,	10	291 53	+8 50	......
1894,	10	249 61	—41 92	......
1895,	10	262 38	+12 77	......
1896,	10	306 83	+44 45	......
1897,	10	260 71	—46 12	......
1898,	10	305 26	+44 55	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
1899,	10	$307 46	+$2 20	$
1900,	10	308 39	+93	......
1901,	10	311 60	+3 21	+28 57
COTTON YARNS.				
1892,	3	326 53	......	......
1893,	3	306 36	—20 17	......
1894,	3	262 90	—43 46	......
1895,	3	305 46	+42 56	......
1896,	3	288 52	—16 94	......
1897,	3	305 92	+17 40	......
1898,	3	307 31	+1 39	......
1899,	3	329 70	+22 39	......
1900,	3	340 32	+10 62	......
1901,	3	343 03	+2 71	+16 50
WORSTED YARNS.				
1892,	3	297 58	......	......
1893,	3	299 20	+1 62	......
1894,	3	279 20	—20 00	......
1895,	3	277 22	—1 98	......
1896,	3	236 21	—41 01	......
1897,	3	276 54	+40 33	......
1898,	3	245 88	—30 66	......
1899,	3	285 88	+40 00	......
1900,	3	295 95	+10 07	......
1901,	3	281 07	—14 88	—16 51

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
MISCELLANEOUS YARNS.				
1892,	9	$389 80	$	$
1893,	9	316 07	—73 73	......
1894,	9	330 31	+14 24	......
1895,	9	358 57	+28 26	......
1896,	9	344 51	—14 06	......
1897,	9	371 72	+27 21	......
1898,	9	339 05	—32 67	......
1899,	9	378 27	+39 22	......
1900,	9	401 49	+23 22	......
1901,	9	411 02	+9 53	+21 22
WOOLEN GOODS.				
1892,	16	350 51	......	......
1893,	16	310 19	—40 32	......
1894,	16	286 00	—24 19	......
1895,	16	313 49	+27 49	......
1896,	16	304 88	—8 61	......
1897,	16	330 75	+25 87	......
1898,	16	334 65	+3 90	......
1899,	16	344 42	+9 77	......
1900,	16	362 87	+18 45	......
1901,	16	354 35	—8 52	+3 84
COTTON GOODS.				
1892,	17	384 50	......	......
1893,	17	306 30	—78 28	......

AVERAGE YEARLY EARNINGS—Continued.

OMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
COTTON GOODS—Continued.				
1894,	17	$317 75	+$11 45	$
1895,	17	332 19	+14 44	......
1896,	17	273 27	—58 92	......
1897,	17	299 84	+26 57	......
1898,	17	323 42	+23 58	......
1899,	17	351 08	+27 66	......
1900,	17	340 78	—10 30	......
1901,	17	352 53	+11 75	—31 97
COTTON AND WOOLEN GOODS.				
1892,	12	346 10	......	......
1893,	12	310 00	—36 10	......
1894,	12	290 19	—19 81	......
1895,	12	306 62	+16 43	......
1896,	12	286 72	—19 90	......
1897,	12	309 46	+22 74	......
1898,	12	315 53	+6 07	......
1899,	12	323 06	+7 53	......
1900,	12	324 05	+99	......
1901,	12	310 79	—13 26	—35 31
WORSTED GOODS.				
1892,	3	362 87	......	......
1893,	3	351 18	—11 69	......
1894,	3	344 35	—6 83	......
1895,	3	352 16	+7 81	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WORSTED GOODS—Continued.				
1896,	3	$340 08	—$12 08	$
1897,	3	420 51	+80 43	......
1898,	3	418 78	—1 73	......
1899,	3	405 67	—13 11	......
1900,	3	413 50	+7 83	......
1901,	3	417 86	+4 36	+54 99
KNIT GOODS.				
1892,	5	289 84	......	......
1893,	5	262 53	—27 31	......
1894,	5	254 93	—7 60	......
1895,	5	274 82	+19 89	......
1896,	5	234 38	—40 44	......
1897,	5	245 16	+10 78	......
1898,	5	252 23	+7 07	......
1899,	5	287 28	+35 05	......
1900,	5	249 69	—37 59	......
1901,	5	230 87	—18 82	—58 97
CHENILLE GOODS.				
1892,	5	411 21	......	......
1893,	5	377 93	—33 28	......
1894,	5	376 55	—1 38	......
1895,	5	387 14	+10 59	......
1896,	5	364 13	—23 01	......
1897,	5	373 04	+8 91	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CHENILLE GOODS—Continued.				
1898,	5	$356 20	—$16 84	$
1899,	5	421 29	+65 09	......
1900,	5	402 55	—18 74	......
1901,	5	419 50	+16 95	+8 29
MIXED TEXTILES.				
1892,	9	351 81	......	......
1893,	9	308 40	—43 41	......
1894,	9	287 86	—20 54	......
1895,	9	303 30	+15 44	......
1896,	9	295 37	—7 93	......
1897,	9	292 18	—3 19	......
1898,	9	298 23	+6 05	......
1899,	9	315 05	+16 82	......
1900,	9	308 02	—7 03	......
1901,	9	313 92	+5 90	—37 89
TAPESTRY AND TABLE COVERS.				
1892,	3	420 53	......	......
1893,	3	312 98	—107 55	......
1894,	3	400 53	+87 55	......
1895,	3	382 64	—17 89	......
1896,	3	389 07	+6 43	......
1897,	3	410 37	+21 30	......
1898,	3	390 10	—20 27	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
TAPESTRY AND TABLE COVERS—Continued.				
1899,	3	$384 80	—$5 30	$
1900,	3	417 92	+33 12	......
1901,	3	426 34	+8 42	+5 81
HOSIERY.				
1892,	13	261 85	......	......
1893,	13	249 64	—12 21	......
1894,	13	219 16	—30 48	......
1895,	13	259 50	+40 34	......
1896,	13	233 41	—26 09	......
1897,	13	256 76	+23 35	......
1898,	13	251 37	—5 39	......
1899,	13	252 76	+1 39	......
1900,	13	269 36	+16 60	......
1901,	13	273 62	+4 26	+11 77
HOSIERY AND KNIT GOODS.				
1892,	3	331 61	......	......
1893,	3	306 32	—25 29	......
1894,	3	319 67	+13 35	......
1895,	3	285 81	—33 86	......
1896,	3	232 27	—53 54	......
1897,	3	276 78	+44 51	......
1898,	3	284 76	+7 98	......
1899,	3	312 85	+28 09	......
1900,	3	292 02	—20 83	......
1901,	3	309 32	+17 30	—22 29

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
SILK BROAD GOODS.				
1892,	4	$247 96	$	$
1893,	4	227 45	—20 51	......
1894,	4	250 43	+22 98	......
1895,	4	234 54	—15 89	......
1896,	4	254 56	+20 02	......
1897,	4	237 23	—17 33	......
1898,	4	244 27	+7 04	......
1899,	4	252 49	+8 22	......
1900,	4	239 41	—13 08	......
1901,	4	231 76	—7 65	—16 20

AVERAGE DAILY WAGE.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

(In this table the average daily wage of employes, skilled and unskilled, in the same establishments for each of the years 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1892. Forty-four industries, representing 354 establishments, are considered.)

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
PIG IRON.			Cts.	Cts.
1892,	13	$1 49	......	......
1893,	13	1 56	+07	......
1894,	13	1 26	—30	......
1895,	13	1 48	+22	......
1896,	13	1 44	—04	......
1897,	13	1 31	—13	......
1898,	13	1 30	—01	......
1899,	13	1 55	+25	......
1900,	13	1 44	—11	......
1901,	13	1 71	+27	+22
ROLLING MILLS—GENERAL				
1892,	32	1 79	......	......
1893,	32	1 78	—01	......
1894,	32	1 61	—17	......
1895,	32	1 62	+01	......
1896,	32	1 66	+04	......
1897,	32	1 55	—11	......
1898,	32	1 55	......	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
ROLLING MILLS—GENERAL PRODUCT—Continued.			Cts.	Cts.
1899,	32	$1 87	+32	......
1900,	32	1 96	+09	......
1901,	32	2 19	+23	+40
IRON AND STEEL SHEETS AND PLATES.				
1892,	14	2 18	......	......
1893,	14	2 38	+20	......
1894,	14	1 97	—41	......
1895,	14	1 82	—15	......
1896,	14	2 05	+23	......
1897,	14	1 82	—23	......
1898,	14	1 80	—02	......
1899,	14	1 95	+15	......
1900,	14	2 05	+10	......
1901,	14	2 08	+03	—10
PLATE AND BAR.				
1892,	3	2 06	......	......
1893,	3	2 49	+43	......
1894,	3	1 73	—76	......
1895,	3	1 48	—25	......
1896,	3	2 01	+53	......
1897,	3	1 62	—39	......
1898,	3	1 52	—10	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PLATE AND BAR—Continued.			Cts.	Cts.
1899,	3	$1 70	+18	......
1900,	3	1 52	—18	......
1901,	3	2 20	+68	+14
STEEL.				
1892,	13	1 80	......	......
1893,	13	1 83	+03	......
1894,	13	1 69	—14	......
1895,	13	1 73	+04	......
1896,	13	2 08	+35	......
1897,	13	1 75	—33	......
1898,	13	1 70	—05	......
1899,	13	1 81	+11	......
1900,	13	2 13	+32	......
1901,	13	1 88	—25	+08
ARCHITECTURAL CAST AND WROUGHT IRON WORK.				
1892,	4	1 95	......	......
1893,	4	1 89	—06	......
1894,	4	1 63	—26	......
1895,	4	1 78	+15	......
1896,	4	1 81	+03	......
1897,	4	1 81	......	......
1898,	4	1 76	—05	......
1899,	4	1 81	+05	......
1900,	4	1 79	—02	......
1901,	4	1 77	—02	—18

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
IRON FORGING.			Cts.	Cts.
1892,	4	$2 48	......	......
1893,	4	2 45	—03	......
1894,	4	1 71	—74	......
1895,	4	1 81	+10	......
1896,	4	2 11	+30	......
1897,	4	1 98	—13	......
1898,	4	1 87	—11	......
1899,	4	1 89	+02	......
1900,	4	2 52	+63	......
1901,	4	2 51	—01	+03
NAILS AND SPIKES.				
1892,	10	1 68	......	......
1893,	10	1 73	+05	......
1894,	10	1 47	—26	......
1895,	10	1 60	+13	......
1896,	10	1 36	—24	......
1897,	10	1 42	+06	......
1898,	10	1 29	—13	......
1899,	10	1 48	+19	......
1900,	10	1 69	+21	......
1901,	10	1 67	—02	—01
NUTS AND BOLTS.				
1892,	2	1 26	......	......
1893,	2	1 11	—15	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
NUTS AND BOLTS—Continued.			Cts.	Cts.
1894,	2	$1 30	+19	......
1895,	2	1 38	+08	......
1896,	2	1 34	—04	......
1897,	2	1 14	—20	......
1898,	2	1 26	+12	......
1899,	2	1 80	+54	......
1900,	2	1 47	—33	......
1901	2	1 42	—05	+16
PIPES AND TUBES.				
1892,	4	1 61	......	......
1893,	4	1 52	—09	......
1894,	4	1 52	......	......
1895,	4	1 54	+02	......
1896,	4	1 42	—12	......
1897,	4	1 70	+28	......
1898,	4	1 68	—02	......
1899,	4	1 73	+05	......
1900,	4	1 75	+02	......
1901,	4	1 72	—03	+11
IRON FOUNDRIES AND MACHINE WORKS.				
1892,	25	1 84	......	......
1893,	25	1 77	—07	......
1894,	25	1 79	+02	......
1895,	25	1 71	—08	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
IRON FOUNDRIES AND MACHINE WORKS—Continued.			Cts.	Cts.
1896,	25	$1 71	......	......
1897,	25	1 69	—02	......
1898,	25	1 76	+07	......
1899,	25	1 76	......	......
1900,	25	1 85	+09	......
1901,	25	1 87	+02	+03
STOVES, RANGES, HEATERS, ETC.				
1892,	9	1 78	......	......
1893,	9	1 82	+04	......
1894,	9	2 02	+20	......
1895,	9	1 96	—06	......
1896,	9	1 94	—02	......
1897,	9	1 90	—04	......
1898,	9	1 85	—05	......
1899,	9	1 97	+12	......
1900,	9	2 25	+28	......
1901,	9	2 14	—11	+36
HARDWARE.				
1892,	4	1 32	......	......
1893,	4	1 51	+19	......
1894,	4	1 65	+14	......
1895,	4	1 43	—22	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
HARDWARE—Continued.			Cts.	Cts.
1896,	4	$1 33	—10	......
1897,	4	1 35	+02	......
1898,	4	1 46	+11	......
1899,	4	1 46	......	......
1900,	4	1 35	—11	......
1901,	4	1 36	+01	+04
MALLEABLE IRON.				
1892,	2	1 71	......	......
1893,	2	1 77	+06	......
1894,	2	1 79	+02	......
1895,	2	1 86	+07	......
1896,	2	1 72	—14	......
1897,	2	1 77	+05	......
1898,	2	1 68	—09	......
1899,	2	1 79	+11	......
1900,	2	1 99	+20	......
1901,	2	1 83	—16	+12
SAWS, EDGE TOOLS, ETC.				
1892,	5	1 77	......	......
1893,	5	1 86	+09	......
1894,	5	1 55	—31	......
1895,	5	1 83	+28	......
1896,	5	1 79	—04	......
1897,	5	1 70	—09	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
SAWS, EDGE TOOLS, ETC.—Continued.			Cts.	Cts.
1898,	5	$1 67	—03	......
1899,	5	1 71	+04	......
1900,	5	1 72	+01	......
1901,	5	1 75	+03	—02
METAL AND METALLIC GOODS.				
1892,	8	1 50	......	......
1893,	8	1 61	+11	......
1894,	8	1 57	—04	......
1895,	8	1 56	—01	......
1896,	8	1 63	+07	......
1897,	8	1 63	......	......
1898,	8	1 53	—10	......
1899,	8	1 53	......	......
1900,	8	1 69	+16	......
1901,	8	1 56	—13	+06
LOCOMOTIVES AND ENGINES.				
1892,	14	1 96	......	......
1893,	14	1 97	+01	......
1894,	14	1 79	—18	......
1895,	14	1 91	+12	......
1896,	14	1 78	—13	......
1897,	14	1 82	+04	......
1898,	14	1 92	+10	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
LOCOMOTIVES AND ENGINES—Continued .			Cts.	Cts.
1899,	14	$1 94	+02	......
1900,	14	1 98	+04	......
1901,	14	2 06	+08	+10
ENGINES AND BOILERS.				
1892,	6	1 66	......	......
1893,	6	1 76	+10	......
1894,	6	1 77	+01	......
1895,	6	1 83	+06	......
1896,	6	1 67	—16	......
1897,	6	1 54	—13	......
1898,	6	1 66	+12	......
1899,	6	1 71	+05	......
1900,	6	1 74	+03	......
1901,	6	1 76	+02	+10
BOILERS.				
1892,	7	1 51	......	......
1893,	7	1 57	+06	......
1894,	7	1 45	—12	......
1895,	7	1 78	+33	......
1896,	7	1 48	—30	......
1897,	7	1 47	—01	......
1898,	7	1 33	—14	......
1899,	7	1 51	+18	......
1900,	7	1 53	+02	......
1901,	7	1 57	+04	+06

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
BRIDGES.			Cts.	Cts.
1894,	1	$1 41	—58	......
1893,	4	1 40	—01	......
1894,	4	1 33	—07	......
1895,	4	1 53	+20	......
1896,	4	1 39	—14	......
1897,	4	1 43	+04	......
1898,	4	1 45	+02	......
1899,	4	1 48	+03	......
1900,	4	1 91	+43	......
1901,	4	1 79	—12	+38
CAR SPRINGS.				
1892,	1	2 17	......	......
1893,	1	1 79	—38	......
1894,	1	1 80	+01	......
1895,	1	2 28	+48	......
1896,	1	2 59	+31	......
1897,	1	2 27	—32	......
1898,	1	2 38	+11	......
1899,	1	2 43	+05	......
1900,	1	2 57	+14	......
1901,	1	2 72	+15	+55
CAR COUPLERS.				
1892,	1	1 76	......	......
1893,	1	1 99	+23	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CAR COUPLERS—Continued.			Cts.	Cts.
1892,	4	$1 41	......	......
1895,	1	1 77	+36	......
1896,	1	1 47	—30	......
1897,	1	1 51	+04	......
1898,	1	1 48	—03	......
1899,	1	1 64	+16	......
1900,	1	1 66	+02	......
1901,	1	1 60	—06	—16
CARS AND CAR WHEELS.				
1892,	8	1 77	......	......
1893,	8	1 78	+01	......
1894,	8	1 75	—03	......
1895,	8	1 75	......	......
1896,	8	1 69	—06	......
1897,	8	1 74	+05	......
1898,	8	1 80	+06	......
1899,	8	1 82	+02	......
1900,	8	1 84	+02	......
1901,	8	1 85	+01	+08
WINDOW GLASS, BOTTLE AND TABLE GOODS.				
1892,	17	1 83	......	......
1893,	17	1 89	+06	......
1894,	17	1 65	—24	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WINDOW GLASS, BOTTLE AND TABLE GOODS—Continued.			Cts.	Cts.
1895,	17	$1 47	—18	......
1896,	17	1 71	+24	......
1897,	17	1 69	—02	......
1898,	17	1 67	—02	......
1899,	17	1 73	+06	......
1900,	17	1 77	+04	......
1901,	17	1 96	+19	+13
SHIP BUILDING.				
1892,	1	1 78	......	......
1893,	1	1 80	+02	......
1894,	1	1 86	+06	......
1895,	1	1 85	—01	......
1896,	1	1 80	—05	......
1897,	1	1 79	—01	......
1898,	1	1 60	—19	......
1899,	1	1 75	+15	......
1900,	1	1 65	—10	......
1901,	1	1 60	—05	—18
PIANOS AND ORGANS.				
1892,	2	1 10	......	......
1893,	2	1 11	+01	......
1894,	2	1 10	—01	......
1895,	2	1 20	+10	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PIANOS AND ORGANS—Continued.			Cts.	Cts.
1896,	2	1 37	+17	......
1897,	2	1 41	+04	......
1898,	2	1 44	+03	......
1899,	2	1 48	+04	......
1900,	2	1 39	—09	......
1901,	2	1 46	+07	+36
RUBBER BOOTS AND SHOES.				
1892,	1	1 75	......	......
1893,	1	1 80	+05	......
1894,	1	1 48	—32	......
1895,	1	1 40	—08	......
1896,	1	1 39	—01	......
1897,	1	1 24	—15	......
1898,	1	1 43	+19	......
1899,	1	1 45	+02	......
1900,	1	1 49	+04	......
1901,	1	1 33	—16	—42
CARBONS.				
1892,	1	1 73	......	......
1893,	1	1 80	+07	......
1894,	1	1 76	—04	......
1895,	1	1 90	+14	......
1896,	1	1 55	—35	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CARBONS—Continued.			Cts.	Cts.
1897,	1	$1 55	......	......
1898,	1	1 55	......	......
1899,	1	1 84	+29	......
1900,	1	1 77	—07	......
1901,	1	1 74	—03	+01
CARPETS.				
1892,	24	1 36	......	......
1893,	24	1 69	+33	......
1894,	24	1 37	—32	......
1895,	24	1 35	—02	......
1896,	24	1 30	—05	......
1897,	24	1 24	—06	......
1898,	24	1 25	+01	......
1899,	24	1 25	......	......
1900,	24	1 30	+05	......
1901,	24	1 34	+04	—02
WOOLEN YARNS.				
1892,	10	95	......	......
1893,	10	1 19	+24	......
1894,	10	90	—29	......
1895,	10	89	—01	......
1896,	10	1 14	+25	......
1897,	10	88	—26	......
1898,	10	1 11	+23	......
1899,	10	1 12	+01	......
1900,	10	1 03	—09	......
1901,	10	1 05	+02	+10

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
COTTON YARNS.			Cts.	Cts.
1892,	3	$1 10	......	......
1893,	3	1 23	+13	......
1894,	3	1 01	—22	......
1895,	3	1 06	+05	......
1896,	3	1 04	—02	......
1897,	3	1 03	—01	......
1898,	3	1 04	+01	......
1899,	3	1 08	+04	......
1900,	3	1 11	+03	......
1901,	3	1 19	+08	+09
WORSTED YARNS.				
1892,	3	99	......	......
1893,	3	1 50	+51	......
1894,	3	1 01	—49	......
1895,	3	92	—09	......
1896,	3	96	+04	......
1897,	3	96	......	......
1898,	3	96	......	......
1899,	3	98	+02	......
1900,	3	1 00	+02	......
1901,	3	95	—05	—04

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
MISCELLANEOUS YARNS.			Cts.	Cts.
1892,	9	$1 29	......	......
1893,	9	1 25	—04	......
1894,	9	1 26	+01	......
1895,	9	1 26	......	......
1896,	9	1 61	+35	......
1897,	9	1 31	—30	......
1898,	9	1 29	—02	......
1899,	9	1 37	+08	......
1900,	9	1 50	+13	......
1901,	9	1 42	—08	+13
WOOLEN GOODS.				
1892,	16	1 17	......	......
1893,	16	1 27	+10	......
1894,	16	1 03	—24	......
1895,	16	1 05	+02	......
1896,	16	1 11	+06	......
1897,	16	1 14	+03	......
1898,	16	1 16	+02	......
1899,	16	1 20	+04	......
1900,	16	1 25	+05	......
1901,	16	1 27	+02	+10
COTTON GOODS.				
1892,	17	1 27	......	......
1893,	17	1 23	—04	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
COTTON GOODS—Continued.			Cts.	Cts.
1894,	17	$1 29	+06	......
1895,	17	1 16	—13	......
1896,	17	1 06	—10	......
1897,	17	1 02	—04	......
1898,	17	1 09	+07	......
1899,	17	1 17	+08	......
1900,	17	1 18	+01	......
1901,	17	1 25	+07	—02
COTTON AND WOOLEN GOODS.				
1892,	12	1 15	......	......
1893,	12	1 22	+07	......
1894,	12	1 12	—10	......
1895,	12	1 16	+04	......
1896,	12	1 30	+14	......
1897,	12	1 15	—15	......
1898,	12	1 16	+01	......
1899,	12	1 18	+02	......
1900,	12	1 26	+08	......
1901,	12	1 18	—08	+03
WORSTED GOODS.				
1892,	3	1 17	......	......
1893,	3	1 58	+41	......
1894,	3	1 45	—13	......
1895,	3	1 33	—12	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WORSTED GOODS—Continued.			Cts.	Cts.
1896,	3	$1 55	+22	......
1897,	3	1 46	—09	......
1898,	3	1 53	+07	......
1899,	3	1 38	—15	......
1900,	3	1 60	+22	......
1901,	3	1 65	+05	+48
KNIT GOODS.				
1892,	5	93	......	......
1893,	5	94	+01	......
1894,	5	1 00	+06	......
1895,	5	97	—03	......
1896,	5	90	—07	......
1897,	5	91	+01	......
1898,	5	1 00	+09	......
1899,	5	1 02	+02	......
1900,	5	88	—14	......
1901,	5	90	+02	—03
CHENILLE GOODS.				
1892,	5	1 28	......	......
1893,	5	1 28	......	......
1894,	5	1 26	—02	......
1895,	5	1 29	+03	......
1896,	5	1 25	—04	......
1897,	5	1 24	—01	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CHENILLE GOODS—Continued.			Cts.	Cts.
1898,	5	$1 18	—06	......
1899,	5	1 44	+26	......
1900,	5	1 52	+08	......
1901,	5	1 49	—03	+21
MIXED TEXTILES.				
1892,	9	1 16	......	......
1893,	9	1 06	—10	......
1894,	9	1 00	—06	......
1895,	9	1 02	+02	......
1896,	9	1 05	+03	......
1897,	9	1 04	—01	......
1898,	9	99	—05	......
1899,	9	1 05	+06	......
1900,	9	1 03	—02	.....
1901,	9	1 08	+05	—08
TAPESTRY AND TABLE COVERS.				
1892,	3	1 39	......	......
1893,	3	1 08	—31	......
1894,	3	1 33	+25	......
1895,	3	1 30	—03	......
1896,	3	1 34	+04	......
1897,	3	1 41	+07	......
1898,	3	1 34	—07	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
TAPESTRY AND TABLE COVERS—Continued.			Cts.	Cts.
1899,	3	$1 39	+05	......
1900,	3	1 66	+27	......
1901,	3	1 54	—12	+15
HOSIERY.				
1892,	13	88	......	......
1893,	13	96	+08	......
1894,	13	80	—16	......
1895,	13	88	+08	......
1896,	13	81	—07	......
1897,	13	89	+08	......
1898,	13	90	+01	......
1899,	13	90	......	......
1900,	13	98	+08	......
1901,	13	94	—04	+06
HOSIERY AND KNIT GOODS.				
1892,	3	1 11	......	......
1893,	3	1 05	—06	......
1894,	3	1 07	+02	......
1895,	3	1 05	—02	......
1896,	3	80	—25	......
1897,	3	92	+12	......
1898,	3	95	+03	......
1899,	3	1 04	+09	......
1900,	3	98	—06	......
1901,	3	1 04	+06	—07

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE OF EMPLOYES, SKILLED AND UNSKILLED, IN SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
SILK BROAD GOODS.			Cts.	Cts.
1892,	4	$0 81	......	......
1893,	4	92	+11	......
1894,	4	86	—06	......
1895,	4	77	—09	......
1896,	4	93	+16	......
1897,	4	78	—15	......
1898,	4	84	+06	......
1899,	4	84	......	......
1900,	4	84	......	......
1901,	4	86	+02	+05

VALUE OF PRODUCT.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897. 1898, 1899, 1900 AND 1901.

(In this table the value of product by the same establishments for each of the years 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1892. Forty-four industries, representing 354 establishments, are considered.)

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PIG IRON.				
1892,	13	$10,597,537	$	$
1893,	13	8,026,593	—2,570,944	....
1894,	13	5,580,847	—2,445,746	....
1895,	13	8,220,266	+2,639,419	....
1896,	13	7,207,417	—1,012,849	....
1897,	13	6,043,503	—1,163,914	....
1898,	13	8,307,428	+2,263,925	....
1899,	13	14,277,497	+5,970,069	....
1900,	13	16,492,134	+2,214,637	....
1901,	13	13,645,721	—2,846,413	+3,048,184
ROLLING MILLS—GENERAL PRODUCT.				
1892,	32	91,945,908	....	....
1893,	32	86,050,594	—5,895,314	....
1894,	32	72,055,767	—13,994,827	....
1895,	32	84,689,471	+12,633,704	....
1896,	32	88,725,133	+4,035,662	....
1897,	32	93,540,222	+4,815,089	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
ROLLING MILLS—GENERAL PRODUCT—Continued.				
1898,	32	$111,954,871	+$18,414,649	$
1899,	32	169,222,486	+57,267,615	....
1900,	32	198,252,323	+29,029,837	....
1901,	32	196,936,504	—1,315,819	+104,990,596
IRON AND STEEL SHEETS AND PLATES.				
1892,	14	11,680,127	....	....
1893,	14	9,584,689	—2,095,438	....
1894,	14	7,798,069	—1,786,620	....
1895,	14	10,604,551	+2,806,482	....
1896,	14	8,740,308	—1,864,243	....
1897,	14	9,668,034	+927,726	....
1898,	14	13,760,272	+4,092,238	....
1899,	14	22,050,830	+8,290,558	....
1900,	14	22,834,195	+783,365	....
1901,	14	28,209,826	+5,375,631	+16,529,699
PLATE AND BAR.				
1892,	3	4,991,702	....	....
1893,	3	3,648,252	—1,343,450	....
1894,	3	2,505,387	—1,142,865	....
1895,	3	3,059,825	+554,438	....
1896,	3	2,822,922	—236,903	....
1897,	3	3,162,028	+339,106	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
PLATE AND BAR—Continued.				
1898,	3	$3,018,260	—$143,768	$
1899,	3	5,472,624	+2,454,364	....
1900,	3	4,028,343	—1,444,281	....
1901,	3	4,246,894	+218,551	—744,803
STEEL.				
1892,	13	24,711,579	....	....
1893,	13	18,805,567	—5,906,012	....
1894,	13	15,781,892	—3,023,675	....
1895,	13	20,687,948	+4,906,056	....
1896,	13	16,603,033	—4,084,915	....
1897,	13	17,454,677	+851,644	....
1898,	13	20,327,249	+2,872,572	....
1899,	13	29,873,149	+9,545,900	....
1900,	13	24,779,969	—5,093,180	....
1901,	13	37,692,910	+12,912,941	+12,981,331
ARCHITECTURAL CAST AND WROUGHT IRON WORK.				
1892,	4	3,040,397	....	....
1893,	4	2,024,821	—1,015,576	....
1894,	4	1,407,416	—617,405	....
1895,	4	1,939,661	+532,245	....
1896,	4	2,236,372	+296,711	....
1897,	4	1,847,959	—388,413	....
1898,	4	2,775,266	+927,307	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
ARCHITECTURAL CAST AND WROUGHT IRON WORK—Continued.				
1899,	4	$3,143,891	+$368,625	$
1900,	4	5,859,998	+2,716,107	....
1901,	4	7,210,281	+1,350,283	+4,169,884
IRON FORGING.				
1892,	4	1,053,091	....	....
1893,	4	789,496	—263,595	....
1894,	4	604,106	—185,390	....
1895,	4	779,569	+175,463	....
1896,	4	739,985	—39,584	....
1897,	4	691,901	—48,084	....
1898,	4	1,033,335	+341,434	....
1899,	4	1,806,887	+773,552	....
1900,	4	1,180,911	—625,976	....
1901,	4	1,127,833	—53,078	+74,742
NAILS AND SPIKES.				
1892,	10	4,827,506	....	....
1893,	10	3,942,713	—884,793	....
1894,	10	3,275,789	—666,924	....
1895,	10	3,630,012	+354,223	....
1896,	10	2,124,658	—1,505,354	....
1897,	10	2,897,297	+772,639	....
1898,	10	2,494,289	—403,008	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
NAILS AND SPIKES—Continued.				
1899,	10	$3,663,000	+$1,168,711	$
1900,	10	5,207,812	+1,544,812	....
1901,	10	3,036,702	—2,171,110	—1,790,804
NUTS AND BOLTS.				
1892,	2	1,152,138	....	....
1893,	2	1,007,993	—144,145	....
1894,	2	844,782	—163,211	....
1895,	2	1,107,466	+262,684	....
1896,	2	845,826	—261,640	....
1897,	2	858,788	+12,962	....
1898,	2	1,042,896	+184,108	....
1899,	2	1,686,712	+643,816	....
1900,	2	2,231,393	+544,681	....
1901,	2	2,184,110	—47,283	+1,031,972
PIPES AND TUBES.				
1892,	4	2,241,867	....	....
1893,	4	2,107,604	—134,263	....
1894,	4	1,927,748	—179,856	....
1895,	4	2,527,348	+599,600	....
1896,	4	2,937,296	+409,948	....
1897,	4	2,701,883	—235,413	....
1898,	4	3,463,901	+762,018	....
1899,	4	4,625,429	+1,161,528	....
1900,	4	5,857,222	+1,231,793	....
1901,	4	6,052,557	+195,335	+3,810,690

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
IRON FOUNDRIES AND MACHINE WORKS.				
1892,	25	$6,311,627	$	$
1893,	25	4,628,768	—1,682,859	....
1894,	25	3,699,595	—929,173	....
1895,	25	4,342,835	+643,240	....
1896,	25	3,515,683	—827,152	....
1897,	25	4,055,129	+539,446	....
1898,	25	4,927,626	+872,497	....
1899,	25	6,795,327	+1,867,701	....
1900,	25	7,270,742	+475,415	....
1901,	25	7,423,400	+152,658	+1,111,773
STOVES, RANGES, HEATERS, ETC.				
1892,	9	1,639,839	....	....
1893,	9	1,525,391	—114,448	....
1894,	9	1,218,872	—306,519	....
1895,	9	1,431,181	+212,309	....
1896,	9	1,383,157	—48,024	....
1897,	9	1,414,639	+31,482	....
1898,	9	1,461,366	+46,727	....
1899,	9	1,798,904	+337,538	....
1900,	9	1,815,164	+16,260	....
1901,	9	1,756,821	—58,343	+116,982

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
HARDWARE.				
1892,	4	$1,242,721	$	$
1893,	4	1,145,987	—96,734	....
1894,	4	1,040,023	—105,964	....
1895,	4	1,255,661	+215,638	....
1896,	4	1,129,798	—125,863	....
1897,	4	1,078,827	—50,971	....
1898,	4	1,407,967	+329,140	....
1899,	4	2,019,722	+611,755	....
1900,	4	1,685,976	—333,746	....
1901,	4	1,928,480	+242,504	+685,759
MALLEABLE IRON.				
1892,	2	452,363	....	....
1893,	2	362,608	—89,755	....
1894,	2	296,371	—66,237	....
1895,	2	367,157	+70,786	....
1896,	2	414,786	+47,629	....
1897,	2	404,410	—10,376	....
1898,	2	704,698	+300,288	....
1899,	2	887,905	+183,207	....
1900,	2	747,232	—140,673	....
1901,	2	860,568	+113,336	+408,205
SAWS, EDGE TOOLS, ETC.				
1892,	5	3,479,164	....	....
1893,	5	3,203,476	—275,688	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
SAWS, EDGE TOOLS, ETC.—Continued.				
1894,	5	$2,402,820	—$800,656	$
1895,	5	2,914,503	+511,683	....
1896,	5	2,731,311	—183,192	....
1897,	5	2,527,680	—203,631	....
1898,	5	3,238,334	+710,654	....
1899,	5	4,559,222	+1,320,888	....
1900,	5	4,764,529	+205,307	....
1901,	5	5,095,464	+330,935	+1,616,300
METAL AND METALLIC GOODS.				
1892,	8	3,027,395	....	....
1893,	8	2,526,382	—501,013	....
1894,	8	2,060,465	—465,917	....
1895,	8	2,831,319	+770,854	....
1896,	8	2,401,636	—429,683	....
1897,	8	2,341,075	—60,561	....
1898,	8	3,070,810	+729,735	....
1899,	8	4,101,137	+1,030,327	....
1900,	8	2,742,603	—1,358,534	....
1901,	8	2,785,309	+42,706	—242,086
LOCOMOTIVES AND ENGINES.				
1892,	14	17,176,167	....	....
1893,	14	16,941,708	—234,459	....
1894,	14	9,629,617	—7,312,091	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
LOCOMOTIVES AND ENGINES—Continued.				
1895,	14	$12,709,222	+$3,079,605	$
1896,	14	14,348,550	+1,639,328	....
1897,	14	14,327,515	—21,035	....
1898,	14	19,449,658	+5,122,143	....
1899,	14	25,412,790	+5,963,132	....
1900,	14	33,554,210	+8,141,420	....
1901,	14	37,028,910	+3,474,700	+19,852,743
ENGINES AND BOILERS.				
1892,	6	2,854,422	....	....
1893,	6	2,296,655	—557,767	....
1894,	6	1,625,120	—671,535	....
1895,	6	1,923,041	+297,921	....
1896,	6	2,070,170	+147,129	....
1897,	6	1,778,989	—291,181	....
1898,	6	2,126,376	+347,387	....
1899,	6	2,792,857	+666,481	....
1900,	6	3,457,461	+664,604	....
1901,	6	3,392,325	—65,136	+537,903
BOILERS.				
1892,	7	1,768,039	....	....
1893,	7	1,514,899	—253,140	....
1894,	7	1,046,140	—468,759	....
1895,	7	991,505	—54,635	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
BOILERS—Continued.				
1896,	7	$1,040,575	+$49,070	$
1897,	7	887,529	—153,046	....
1898,	7	1,444,757	+557,228	....
1899,	7	1,273,424	—171,333	....
1900,	7	1,531,763	+258,339	....
1901,	7	1,885,929	+354,166	+117,890
BRIDGES.				
1892,	4	2,179,715	....	....
1893,	4	2,009,234	—170,481	....
1894,	4	1,292,171	—717,063	....
1895,	4	1,793,317	+501,146	....
1896,	4	1,332,526	—460,791	....
1897,	4	1,181,470	—151,056	....
1898,	4	1,651,568	+470,098	....
1899,	4	2,748,096	+1,096,528	....
1900,	4	5,956,502	+3,208,406	....
1901,	4	3,575,000	—2,381,502	+1,395,285
CAR SPRINGS.				
1892,	1	1,139,220	....	....
1893,	1	704,754	—434,466	....
1894,	1	331,010	—373,744	....
1895,	1	496,984	+165,974	....
1896,	1	517,221	+20,237	....
1897,	1	428,271	—88,950	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CAR SPRINGS—Continued.				
1898,	1	$652,635	+$224,364	$
1899,	1	1,045,408	+392,773	....
1900,	1	1,123,226	+77,818	....
1901,	1	1,070,693	—52,533	—68,527
CAR COUPLERS.				
1892,	1	1,455,135	....	....
1893,	1	1,009,284	—445,851	....
1894,	1	510,732	—498,552	....
1895,	1	985,258	+474,526	....
1896,	1	1,349,321	+364,063	....
1897,	1	1,052,857	—296,464	....
1898,	1	1,404,617	+351,760	....
1899,	1	1,668,325	+263,708	....
1900,	1	1,524,435	—143,890	....
1901,	1	1,052,300	—472,135	—402,835
CARS AND CAR WHEELS.				
1892,	8	7,920,412	....	....
1893,	8	6,054,890	—1,865,522	....
1894,	8	4,090,667	—1,964,223	....
1895,	8	4,291,747	+201,080	....
1896,	8	4,208,607	—83,140	....
1897,	8	3,265,217	—943,390	....
1898,	8	4,200,831	+935,614	....
1899,	8	5,329,637	+1,128,806	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
CARS AND CAR WHEELS—Continued.				
1900,	8	$6,276,282	+$946,645	$
1901,	8	5,739,513	—536,769	—2,180,899
WINDOW GLASS, BOTTLE AND TABLE GOODS.				
1892,	17	5,919,793	....	....
1893,	17	4,523,986	—1,395,807	....
1894,	17	4,620,213	+96,227	....
1895,	17	4,306,614	—313,599	....
1896,	17	3,969,520	—337,094	....
1897,	17	4,941,382	+71,862	....
1898,	17	5,690,250	+748,868	....
1899,	17	6,425,487	+735,237	....
1900,	17	5,583,805	—841,682	....
1901,	17	5,204,192	—379,613	—715,601
SHIP BUILDING.				
1892,	1	501,753	....	....
1893,	1	832,720	+330,967	....
1894,	1	506,192	—326,528	....
1895,	1	426,303	—79,889	....
1896,	1	686,720	+260,417	....
1897,	1	476,868	—209,852	....
1898,	1	1,217,489	+740,621	....
1899,	1	1,507.546	+290,057	....
1900,	1	1,493,910	—13,636	....
1901,	1	1,170,750	—323,160	+668,997

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
PIANOS AND ORGANS.				
1892,	2	$196,553	$	$
1893,	2	170,969	—25,584	....
1894,	2	139,818	—31,151	....
1895,	2	161,111	+21,293	....
1896,	2	139,808	—21,303	....
1897,	2	145,743	+5,935	....
1898,	2	151,011	+5,268	....
1899,	2	171,279	+20,268	....
1900,	2	215,387	+44,108	....
1901,	2	211,177	—4,210	+14,624
RUBBER BOOTS AND SHOES.				
1982,	1	749,235	....	....
1893,	1	845,688	+96,453	....
1894,	1	711,056	—134,632	....
1895,	1	839,553	+128,497	....
1896,	1	812,523	—27,030	....
1897,	1	619,765	—192,758	....
1898,	1	960,923	+341,158	....
1899,	1	1,082,260	+121,337	....
1900,	1	1,059,420	—22,840	....
1901,	1	941,993	—117,427	+192,758
CARBONS.				
1892,	1	59,000	....	....
1893,	1	70,000	+11,000	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CARBONS—Continued.				
1894,	1	$85,000	+$15,000	$
1895,	1	76,500	—8,500	....
1896,	1	83,000	+6,500	....
1897,	1	75,000	—8,000	....
1898,	1	70,000	—5,000	....
1899,	1	66,000	—4,000	....
1900,	1	60,167	—5,833	....
1901,	1	60,846	+679	+1,846
CARPETS.				
1892,	24	11,614,157	....	....
1893,	24	8,626,792	—2,987,365	....
1894,	24	8,222,838	—403,954	....
1895,	24	9,325,013	+1,102,175	....
1896,	24	7,626,053	—1,698,960	....
1897,	24	8,670,951	+1,044,898	....
1898,	24	8,147,236	—523,715	....
1899,	24	9,987,646	+1,840,410	....
1900,	24	9,652,462	—335,184	....
1901,	24	9,718,668	+66,206	—1,895,489
WOOLEN YARNS.				
1892,	10	3,243,694	....	....
1893,	10	2,441,663	—802,031	....
1894,	10	1,999,184	—442,479	....
1895,	10	2,600,417	+601,233	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
1896,	10	$2,338,390	—$262,027	$
1897,	10	2,700,099	+361,709	....
1898,	10	3,091,557	+391,458	....
1899,	10	4,042,767	+951,210	....
1900,	10	5,181,604	+1,138,837	....
1901,	10	4,781,637	—399,967	+1,537,943
COTTON YARNS.				
1892,	3	564,857	....	....
1893.	3	464,105	—100,752	....
1894,	3	438,901	—25,204	....
1895,	3	500,504	+61,603	....
1896,	3	405,093	—95,411	....
1897,	3	483,900	+78,807	....
1898,	3	447,456	—36,444	....
1899,	3	460,269	+12,813	....
1900,	3	571,569	+111,300	....
1901,	3	479,046	—92,523	—85,811
WORSTED YARNS.				
1892,	3	1,692,713	....	....
1893,	3	1,029,283	—663,430	....
1894,	3	1,031,841	+2,558	....
1895,	3	1,299,326	+267,485	....
1896,	3	796,376	—502,950	....
1897,	3	1,061,344	+264,968	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WORSTED YARNS—Continued.				
1898,	3	$853,230	—$208,114	$
1899,	3	1,495,701	+642,471	....
1900,	3	1,508,244	+12,543	....
1901,	3	1,419,743	—88,501	—272,970
MISCELLANEOUS YARNS.				
1892,	9	1,291,013	....	....
1893,	9	889,403	—401,610	....
1894,	9	764,435	—124,968	....
1895,	9	898,503	+134,068	....
1896,	9	701,547	—196,956	....
1897,	9	1,025,606	+324,059	....
1898,	9	802,170	—223,436	....
1899,	9	1,105,504	+303,334	....
1900,	9	1,012,111	—93,393	....
1901,	9	1,025,967	+13,856	—265,046
WOOLEN GOODS.				
1892,	16	9,548,699	....	....
1893,	16	7,014,527	—2,534,172	....
1894,	16	5,946,052	—1,068,475	....
1895,	16	6,742,988	+796,636	....
1896,	16	5,231,275	—1,511,713	....
1897,	16	6,150,087	+918,812	....
1898,	16	6,266,213	+116,126	....
1899,	16	7,347,006	+1,080,793	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
WOOLEN GOODS—Continued.				
1900,	16	$7,198,316	—$148,690	$
1901,	16	7,845,888	+647,572	—1,702,811
COTTON GOODS.				
1892,	17	9,394,632	....	....
1893,	17	7,062,762	—2,331,870	....
1894,	17	7,171,910	+109,148	....
1895,	17	6,697,893	—474,017	....
1896,	17	6,157,585	—540,308	....
1897,	17	7,290,259	+1,132,674	....
1898,	17	7,459,927	+169,668	....
1899,	17	8,624,421	+1,164,494	....
1900,	17	7,378,078	—1,246,343	....
1901,	17	8,250,689	+872,611	—1,143,943
COTTON AND WOOLEN GOODS.				
1892,	12	2,207,731	....	....
1893,	12	1,676,241	—531,490	....
1894,	12	1,408,290	—267,951	....
1895,	12	1,508,407	+100,117	....
1896,	12	1,296,700	—211,707	....
1897,	12	1,485,822	+189,122	....
1898,	12	1,584,830	+99,008	....
1899,	12	1,904,700	+319,870	....
1900,	12	1,751,815	—152,885	....
1901,	12	1,640,565	—111,250	—567,166

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
WORSTED GOODS.				
1892, ...	3	$1,393,225	$	$
1893, ...	3	754,032	—639,193	....
1894, ...	3	942,455	+188,423	....
1895, ...	3	1,026,041	+83,586	....
1896, ...	3	637,328	—388,713	....
1897, ...	3	1,311,883	+674,555	....
1898, ...	3	1,311,890	+7	....
1899, ...	3	1,382,803	+70,913	....
1900, ...	3	1,098,506	—184,297	....
1901, ...	3	929,687	—168,819	—463,538
KNIT GOODS.				
1892, ...	5	1,284,013	....	....
1893, ...	5	1,087,753	—196,260	....
1894, ...	5	812,353	—275,400	....
1895, ...	5	1,080,020	+267,667	....
1896, ...	5	948,460	—131,560	....
1897, ...	5	1,077,926	+129,466	....
1898, ...	5	1,045,926	—32,000	....
1899, ...	5	1,135,696	+89,770	....
1900, ...	5	1,326,416	+190,720	....
1901, ...	5	973,529	—352,887	—310,484
CHENILLE GOODS.				
1892.	5	2,280,994	....	....
1893, ...	5	1,507,337	—773,657	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CHENILLE GOODS—Continued.				
1894,	5	$1,639,750	+$132,413	$
1895,	5	1,748,029	+108,279	....
1896,	5	1,711,009	—37,020	....
1897,	5	1,890,153	+179,144	....
1898,	5	1,990,273	+100,120	....
1899,	5	2,260,296	+270,023	....
1900,	5	1,926,687	—333,609	....
1901,	5	2,105,386	+178,699	—175,608
MIXED TEXTILES.				
1892,	9	3,378,358	....	....
1893,	9	2,462,288	—916,070	....
1894,	9	2,458,285	—4,003	....
1895,	9	2,813,496	+355,211	....
1896,	9	2,397,722	—415,774	....
1897,	9	2,506,565	+108,843	....
1898,	9	2,777,338	+270,773	....
1899,	9	3,445,679	+668,341	....
1900,	9	3,683,594	+237,915	....
1901,	9	3,736,137	+52,543	+357,779
TAPESTRY AND TABLE COVERS.				
1892,	3	370,648	....	....
1893,	3	301,223	—69,425	....
1894,	3	309,906	+8,683	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
TAPESTRY AND TABLE COVERS—Continued.				
1905,	3	$496,668	+$186,762	$
1896,	3	423,356	—73,312	....
1897,	3	500,746	+77,390	....
1898,	3	589,330	+88,584	....
1899,	3	648,616	+59,286	....
1900,	3	666,255	+17,639	....
1901,	3	457,030	—209,225	+86,382
HOSIERY.				
1892,	13	3,006,366	....	....
1893,	13	2,429,258	—577,108	....
1894,	13	2,090,722	—338,536	....
1895,	13	2,819,230	+728,508	....
1896,	13	2,131,116	—688,114	....
1897,	13	2,451,639	+320,523	....
1898,	13	2,592,249	+140,610	....
1899,	13	2,679,349	+87,100	....
1900,	13	2,615,498	—63,851	....
1901,	13	2,558,590	—56,908	—447,776
HOSIERY AND KNIT GOODS.				
1892,	3	748,926	....	....
1893,	3	739,304	—9,622	....
1894,	3	677,810	—61,494	....
1895,	3	594,226	—83,584	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of product.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
HOSIERY AND KNIT GOODS—Continued.				
1896,	3	$459,551	—$134,675	$
1897,	3	541,180	+81,629	....
1898,	3	521,697	—19,483	....
1899,	3	607,414	+85,717	....
1900,	3	583,170	—24,244	....
1901,	3	596,327	+13,157	—152,599
SILK BROAD GOODS.				
1892,	4	3,118,034	....	....
1893,	4	1,176,070	—1,941,964	....
1894,	4	2,624,564	+1,448,494	....
1895,	4	3,250,176	+625,612	....
1896,	4	2,873,300	—376,876	....
1897,	4	3,979,336	+1,106,036	....
1898,	4	4,554,525	+575,189	....
1899,	4	5,598,713	+1,044,188	....
1900,	4	5,048,800	—549,913	....
1901,	4	4,948,756	—100,044	+1,830,722

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

(In this table the value of the average annual product per employe by same establishments for each of the years 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1892. Forty-four industries, representing 354 establishments are considered.)

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
PIG IRON.				
1892,	13	$3,972 09	$	$
1893,	13	3,612 33	—$359 76	....
1894,	13	3,187 23	—425 10	....
1895,	13	3,622 86	+435 63	....
1896,	13	3,214 72	—408 14	....
1897,	13	3,174 11	—40 61	....
1898,	13	3,911 22	+737 11	....
1899,	13	4,735 49	+824 27	....
1900,	13	5,394 88	+659 39	....
1901,	13	5,549 30	+154 42	+1,577 21
ROLLING MILLS—GENERAL PRODUCT.				
1892,	32	2,599 69	....	....
1893,	32	2,631 92	+32 23	....
1894,	32	2,392 29	—239 63	....
1895,	32	2,411 23	+18 94	....
1896,	32	2,552 87	+141 64	....
1897,	32	2,629 08	+76 21	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
ROLLING MILLS—GENERAL PRODUCT—Continued.				
1898,	32	$2,786 68	+$157 60	$
1899,	32	3,887 22	+1,100 54	....
1900,	32	6,636 51	+2,749 29	....
1901,	32	5,085 39	—1,551 12	+2,485 70
IRON AND STEEL SHEETS AND PLATES.				
1892,	14	2,295 17	....	....
1893,	14	2,088 17	—207 00	....
1894,	14	1,816 04	—272 13	....
1895,	14	2,177 97	+361 93	....
1896,	14	1,932 84	—245 13	....
1897,	14	1,857 45	—75 39	....
1898,	14	2,109 18	+251 73	....
1899,	14	2,648 11	+538 93	....
1900,	14	2,896 27	+248 16	....
1901,	14	2,983 27	+87 00	+688 10
PLATE AND BAR.				
1892,	3	1,526 98	....	....
1893,	3	1,565 77	+38 79	....
1894,	3	1,444 02	—121 75	....
1895,	3	1,352 11	—91 91	....
1896,	3	2,179 86	+827 75	....
1897,	3	2,325 02	+145 16	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
PLATE AND BAR—Continued.				
1898,	3	$1,272 43	—$1,052 59	$
1899,	3	2,020 16	+747 73	....
1900,	3	1,463 79	—556 37	....
1901,	3	2,262 63	+798 84	+735 65
STEEL.				
1892,	13	1,889 99	....	....
1893,	13	1,776 62	—113 37	....
1894,	13	1,614 02	—162 60	....
1895,	13	1,704 39	+90 37	....
1896,	13	1,650 73	—53 66	....
1897,	13	1,684 65	+33 92	....
1898,	13	1,669 45	—15 20	....
1899,	13	2,049 20	+379 75	....
1900,	13	3,044 97	+995 77	....
1901,	13	2,156 34	—888 63	+266 35
ARCHITECTURAL CAST AND WROUGHT IRON WORK.				
1892,	4	2,252 15	....	....
1893,	4	1,684 54	—567 61	....
1894,	4	1,442 03	—242 51	....
1895,	4	1,348 86	—93 17	....
1896,	4	1,722 94	+374 08	....
1897,	4	1,701 62	—21 32	....
1898,	4	1,933 91	+232 29	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
ARCHITECTURAL CAST AND WROUGHT IRON WORK—Continued.				
1899,	4	$1,791 39	—$142 52	$
1900,	4	2,524 77	+733 38	....
1901,	4	2,772 12	+247 35	+519 97
IRON FORGING.				
1892,	4	1,806 33	....	....
1893,	4	1,557 19	—249 14	....
1894,	4	1,288 08	—269 11	....
1895,	4	1,312 40	+24 32	....
1896,	4	1,300 50	—11 90	....
1897,	4	1,298 13	—2 37	....
1898,	4	1,546 91	+248 78	....
1899,	4	2,696 85	+1,149 94	....
1900,	4	7,334 85	+4,638 00	....
1901,	4	7,048 96	—285 89	+5,242 63
NAILS AND SPIKES.				
1892,	10	1,601 16	....	....
1893,	10	1,388 28	—212 88	....
1894,	10	1,421 17	+32 89	....
1895,	10	1,498 77	+77 60	....
1896,	10	1,123 56	—375 21	....
1897,	10	1,690 37	+566 81	....
1898,	10	1,188 32	—502 05	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
NAILS AND SPIKES—Continued.				
1899,	10	$1,552 12	+$363 80	$
1900,	10	1,967 44	+415 32	....
1901,	10	1,889 68	—77 76	+288 52
NUTS AND BOLTS.				
1892,	2	1,873 39	....	....
1893,	2	1,450 35	—423 04	....
1894,	2	1,508 54	+58 19	....
1895,	2	1,735 84	+227 30	....
1896,	2	1,595 90	—139 94	....
1897,	2	1,490 95	—104 95	....
1898,	2	1,375 85	—115 10	....
1899,	2	1,766 19	+390 34	....
1900,	2	1,759 77	—6 42	....
1901,	2	2,139 19	+379 42	+265 80
PIPES AND TUBES.				
1892,	4	1,678 04	....	....
1893,	4	1,607 63	—70 41	....
1894,	4	1,526 32	—81 31	....
1895,	4	1,738 20	+211 88	....
1896,	4	2,156 31	+418 11	....
1897,	4	1,991 07	—165 24	....
1898,	4	2,148 82	+157 75	....
1899,	4	2,689 20	+540 38	....
1900,	4	2,854 40	+165 20	....
1901,	4	2,560 03	—294 37	+881 99

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON FOUNDRIES AND MACHINE WORKS.				
1892,	25	$1,775 92	$	$
1893,	25	1,494 59	—281 33	....
1894,	25	1,421 28	—73 31	....
1895,	25	1,416 45	—4 83	....
1896,	25	1,258 29	—158 16	....
1897,	25	1,350 81	+92 52	....
1898,	25	1,442 09	+91 28	....
1899,	25	1,661 04	+218 95	....
1900,	25	1,767 75	+106 71	....
1901,	25	1,658 12	—109 63	—117 80
STOVES, RANGES, HEATERS, ETC.				
1892,	9	1,319 34	....	....
1893,	9	1,120 79	—198 55	....
1894,	9	984 55	—136 24	....
1895,	9	1,113 76	+129 21	....
1896,	9	1,067 25	—46 51	....
1897,	9	1,106 91	+39 66	....
1898,	9	1,115 55	+8 64	....
1899,	9	1,379 53	+263 98	....
1900,	9	1,387 74	+8 21	....
1901,	9	1,326 90	—60 84	+7 56

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
HARDWARE.				
1892,	4	$794 07	$	$
1893,	4	742 22	—51 85	....
1894,	4	710 39	—31 83	....
1895,	4	791 71	+81 32	....
1896,	4	771 72	—19 99	....
1897,	4	687 59	—84 13	....
1898,	4	830 66	+143 07	....
1899,	4	1,048 66	+218 00	....
1900,	4	988 26	—60 40	....
1901,	4	1,101 36	+113 10	+307 29
MALLEABLE IRON.				
1892,	2	1,128 09	....	....
1893,	2	1,001 68	—126 41	....
1894,	2	1,011 51	+9 83	....
1895,	2	1,000 43	—11 08	....
1896,	2	932 10	—68 33	....
1897,	2	938 31	+6 21	....
1898,	2	1,011 04	+72 73	....
1899,	2	1,190 22	+179 18	....
1900,	2	1,213 04	+22 82	....
1901,	2	1,077 06	—135 98	—51 03

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892.
SAWS, EDGE TOOLS, ETC.				
1892, ...	5	$1,421 23	$	$
1893, ...	5	1,449 54	+28 31	....
1894, ...	5	1,222 81	—226 73	....
1895, ...	5	1,332 04	+109 23	....
1896, ...	5	1,258 09	—73 95	....
1897, ...	5	1,188 94	—69 15	....
1898, ...	5	1,270 43	+81 49	....
1899, ...	5	1,480 75	+210 32	....
1900, ...	5	1,503 95	+23 20	....
1901, ...	5	1,516 51	+12 56	+95 28
METAL AND METALLIC GOODS.				
1892, ...	8	1,753 99	....	....
1893, ...	8	1,557 57	—196 42	....
1894, ...	8	1,373 64	—183 93	....
1895, ...	8	1,661 57	+287 93	....
1896, ...	8	1,464 41	—197 16	....
1897, ...	8	1,545 26	+80 85	....
1898, ...	8	1,908 52	+363 26	....
1899, ...	8	2,267 07	+358 55	....
1900, ...	8	1,684 65	—582 42	....
1901, ...	8	1,717 21	+32 56	—36 78
LOCOMOTIVES AND ENGINES.				
1892, ...	14	1,481 86	....	....
1893, ...	14	1,454 98	—26 88	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1892
LOCOMOTIVES AND ENGINES—Continued.				
1894,	14	$1,140 81	—$314 17	$
1895,	14	1,357 39	+216 58	....
1896,	14	1,402 87	+45 48	....
1897,	14	1,427 33	+24 46	....
1898,	14	1,568 90	+141 57	....
1899,	14	1,717 66	+148 76	....
1900,	14	1,914 87	+197 21	....
1901,	14	1,942 96	+28 09	+461 10
ENGINES AND BOILERS.				
1892,	6	1,745 82	....	....
1893,	6	1,659 43	—86 39	....
1894,	6	1,638 23	—21 20	....
1895,	6	1,568 55	—69 68	....
1896,	6	1,561 21	—7 34	....
1897,	6	1,476 34	—84 87	....
1898,	6	1,675 63	+199 29	....
1899,	6	1,982 15	+306 52	....
1900,	6	2,171 77	+189 62	....
1901,	6	1,994 31	—177 46	+248 49
BOILERS.				
1892,	7	2,320 26	....	....
1893,	7	2,098 19	—222 07	....
1894,	7	1,513 95	—584 24	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893. 1894, 1895. 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
BOILERS—Continued.				
1895,	7	$1,428 68	—$85 27	$
1896,	7	1,393 01	—35 67	....
1897,	7	1,361 24	—31 77	....
1898,	7	1,783 65	+422 41	....
1899,	7	2,487 16	+703 51	....
1900,	7	2,478 58	—8 58	....
1901,	7	2,663 74	+185 16	+343 48
BRIDGES.				
1892,	4	1,791 05	....	....
1893,	4	2,069 25	+278 20	....
1894,	4	1,997 17	—72 08	....
1895,	4	1,848 78	—148 39	....
1896,	4	1,805 59	—43 19	....
1897,	4	1,875 35	+69 76	....
1898,	4	2,181 73	+306 38	....
1899,	4	2,818 56	+636 83	....
1900,	4	3,992 29	+1,173 73	....
1901,	4	2,450 30	—1,541 99	+659 25
CAR SPRINGS.				
1892,	1	5,503 48	....	....
1893,	1	3,768 74	—1,734 74	....
1894,	1	3,064 91	—703 83	....
1895,	1	4,644 71	+1,579 80	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CAR SPRINGS—Continued.				
1896,	1	$4,497 57	—$147 14	$
1897,	1	3,426 17	—1,071 40	....
1898,	1	4,661 68	+1,235 51	....
1899,	1	5,906 26	+1,244 58	....
1900,	1	6,455 32	+549 06	....
1901,	1	6,015 13	—440 19	+511 65
CAR COUPLERS.				
1892,	1	2,194 79	....	....
1893,	1	1,770 68	—424 09	....
1894,	1	1,227 72	—542 96	....
1895,	1	1,625 84	+398 12	....
1896,	1	1,382 50	—243 34	....
1897,	1	1,295 03	—87 47	....
1898,	1	1,793 89	+498 86	....
1899,	1	1,843 45	+49 56	....
1900,	1	1,742 21	—101 24	....
1901,	1	1,299 14	—443 07	—895 65
CARS AND CAR WHEELS.				
1892,	8	2,221 09	....	....
1893,	8	1,925 06	—295 23	....
1894,	8	1,445 47	—480 39	....
1895,	8	1,486 28	+40 81	....
1896,	8	1,481 38	—4 90	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CARS AND CAR WHEELS—Continued.				
1897,	8	$1,227 07	—$254 31	$
1898,	8	1,176 04	—51 03	....
1899,	8	1,673 88	+497 84	....
1900,	8	1,925 24	+251 36	....
1901,	8	1,721 50	—203 74	—499 59
WINDOW GLASS, BOTTLE AND TABLE GOODS.				
1892,	17	909 06	....	....
1893,	17	754 88	—154 18	....
1894,	17	896 78	+141 90	....
1895,	17	695 17	—201 60	....
1896,	17	815 43	+120 26	....
1897,	17	989 66	+174 23	....
1898,	17	1,021 22	+31 56	....
1899,	17	1,074 68	+53 46	....
1900,	17	974 15	—100 53	....
1901,	17	969 66	—4 49	+60 60
SHIP BUILDING.				
1892,	1	1,140 35	....	....
1893,	1	1,428 34	+287 99	....
1894,	1	1,281 50	—146 84	....
1895,	1	1,268 76	—12 74	....
1896,	1	1,330 85	+62 09	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
SHIP BUILDING—Continued.				
1897,	1	$1,229 04	—$101 81	$
1898,	1	1,503 07	+274 03	....
1900,	1	1,659 90	+12 31	....
1901,	1	1,601 57	—58 33	+461 22
PIANOS AND ORGANS.				
1892,	2	1,213 29	....	....
1893,	2	1,055 37	—157 92	....
1894,	2	863 08	—192 29	....
1895,	2	1,134 59	+271 51	....
1896,	2	1,109 59	—25 00	....
1897,	2	1,165 94	+56 35	....
1898,	2	1,189 06	+23 12	....
1899,	2	1,427 33	+238 27	....
1900,	2	1,259 57	—167 76	....
1901,	2	1,234 95	—24 62	+21 66
RUBBER BOOTS AND SHOES.				
1892,	1	2,305 34	....	....
1893,	1	2,416 25	+110 91	....
1894,	1	2,031 59	—384 66	....
1895,	1	2,109 43	+77 84	....
1896,	1	2,263 29	+153 86	....
1897,	1	1,652 71	—610 58	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
RUBBER BOOTS AND SHOES—Continued.				
1898,	1	$2,402 31	+$749 60	$
1899,	1	2,164 52	—237 79	....
1900,	1	2,118 84	—45 68	....
1901,	1	1,836 24	—282 60	—469 10
CARBONS.				
1892,	1	1,229 17	....	....
1893,	1	1,400 00	+170 83	....
1894,	1	1,545 45	+145 45	....
1895,	1	1,561 22	+15 77	....
1897,	1	1,500 00	—100 00	....
1896,	1	1,600 00	+38 78	....
1898,	1	1,400 00	—100 00	....
1899,	1	1,736 84	+336 84	....
1900,	1	1,626 13	—110 71	....
1901,	1	1,601 21	—24 92	+372 04
CARPETS.				
1892,	24	1,720 62	....	....
1893,	24	1,524 17	—196 45	....
1894,	24	1,543 90	+19 73	....
1895,	24	1,578 64	+34 74	....
1896,	24	1,422 24	—156 40	....
1897,	24	1,577 68	+155 44	....
1898,	24	1,590 33	+12 65	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
CARPETS—Continued.				
1899,	24	$1,616 65	+$26 32	$
1900,	24	1,663 36	+46 71	....
1901,	24	1,613 74	—49 62	—106 88
WOOLEN YARNS.				
1892,	10	1,739 25	....	....
1893,	10	1,659 86	—79 39	....
1894,	10	1,741 45	+81 59	....
1895,	10	1,609 17	—132 28	....
1896,	10	1,756 87	+147 70	....
1897,	10	1,829 34	+72 47	....
1898,	10	2,043 33	+213 99	....
1899,	10	2,369 73	+326 40	....
1900,	10	2,434 96	+65 23	....
1901,	10	2,440 86	+5 90	+701 61
COTTON YARNS.				
1892,	3	2,180 91	....	....
1893,	3	1,991 87	—189 04	....
1894,	3	1,625 56	—366 31	....
1895,	3	1,702 39	+76 83	....
1896,	3	1,841 33	+138 94	....
1897,	3	1,897 65	+56 32	....
1898,	3	1,675 86	—221 79	....
1899,	3	1,743 44	+67 58	....
1900,	3	2,078 43	+334 99	....
1901,	3	1,863 99	—214 44	—316 92

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WORSTED YARNS.				
1892,	3	$1,689 33	$	$
1893,	3	1,453 79	—235 54	....
1894,	3	1,429 14	—24 65	....
1895,	3	1,291 57	—137 57	....
1896,	3	1,197 56	—94 01	....
1897,	3	1,457 89	+260 33	....
1898,	3	1,196 68	—261 21	....
1899,	3	1,784 84	+588 16	....
1900,	3	1,894 78	+109 94	....
1901,	3	1,672 25	—222 53	—17 08
MISCELLANEOUS YARNS.				
1892,	9	2,373 18	....	....
1893,	9	1,864 58	—508 60	....
1894,	9	1,828 78	—35 80	....
1895,	9	2,019 11	+190 33	....
1896,	9	1,853 30	—165 81	....
1897,	9	2,430 30	+557 00	....
1898,	9	2,041 14	—389 16	....
1899,	9	2,440 40	+399 26	....
1900,	9	2,706 18	+265 78	....
1901,	9	2,692 83	—13 35	+319 65
WOOLEN GOODS.				
1892,	16	1,713 39	....	....
1893,	16	1,423 98	—289 41	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
WOOLEN GOODS—Continued.				
1894,	16	$1,224 48	—$199 50	$
1895,	16	1,247 54	+23 06	....
1896,	16	1,330 10	+82 56	....
1897,	16	1,492 37	+162 27	....
1898,	16	1,515 04	+22 67	....
1899,	16	1,688 97	+173 93	....
1900,	16	1,592 55	—96 42	....
1901,	16	1,726 65	+134 10	+13 26
COTTON GOODS.				
1892,	17	2,180 74	....	....
1893,	17	1,823 12	—357 62	....
1894,	17	1,945 19	+122 07	....
1895,	17	1,706 47	—238 72	....
1896,	17	1,581 30	—125 17	....
1897,	17	1,747 01	+165 71	....
1898,	17	1,756 93	+9 92	....
1899,	17	2,007 55	+250 62	....
1900,	17	1,838 54	—169 01	....
1901,	17	2,143 04	+304 50	—37 70
COTTON AND WOOLEN GOODS.				
1892,	12	1,580 34	....	....
1893,	12	1,330 35	—249 99	....
1894,	12	1,128 44	—201 91	....
1895,	12	1,101 03	—27 41	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
COTTON AND WOOLEN GOODS—Continued.				
1896, ...	12	$1,097 04	—$3 99	$
1897, ...	12	1,278 68	+181 64	....
1898, ...	12	1,200 63	—78 05	....
1899, ...	12	1,509 27	+308 64	....
1900, ...	12	1,461 06	—48 21	....
1901, ...	12	1,408 21	—52 85	—172 13
WORSTED GOODS.				
1892, ...	3	2,107 75	....	....
1893, ...	3	1,953 45	—154 30	....
1894, ...	3	2,044 37	+90 92	....
1895, ...	3	1,875 76	—168 61	....
1896, ...	3	1,638 38	—237 38	....
1897, ...	3	2,150 63	+512 25	....
1898, ...	3	2,250 24	+99 61	....
1899, ...	3	2,316 25	+66 01	....
1900, ...	3	2,441 12	+124 87	....
1901, ...	3	2,234 82	—206 30	+127 07
KNIT GOODS.				
1892, ...	5	1,298 29	....	....
1893, ...	5	1,117 93	—180 36	....
1894, ...	5	1,006 63	—111 30	....
1895, ...	5	1,027 61	+20 98	....
1896, ...	5	974 78	—52 83	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
KNIT GOODS—Continued.				
1897,	5	$1,067 25	+$92 47	$
1898,	5	1,067 27	+02	....
1899,	5	1,131 17	+63 90	....
1900,	5	1,046 07	—85 10	....
1901,	5	914 97	—131 10	—383 32
CHENILLE GOODS.				
1892,	5	1,446 41	....	....
1893,	5	1,307 32	—139 09	....
1894,	5	1,394 35	+87 03	....
1895,	5	1,470 17	+75 82	....
1896,	5	1,241 66	—228 51	....
1897,	5	1,225 08	—16 58	....
1898,	5	1,263 67	+38 59	....
1899,	5	1,400 43	+136 76	....
1900,	5	1,316 94	—83 49	....
1901,	5	1,411 12	+94 18	—35 29
MIXED TEXTILES.				
1892,	9	1,669 10	....	....
1893,	9	1,458 70	—210 40	....
1894,	9	1,330 96	—127 74	....
1895,	9	1,387 30	+56 34	....
1896,	9	1,265 95	—121 35	....
1897,	9	1,237 81	—28 14	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
MIXED TEXTILES—Continued.				
1898,	9	$1,310 06	+$72 25	$
1899,	9	1,417 39	+107 33	....
1900,	9	1,323 61	—93 78	....
1901,	9	1,413 06	+89 45	—256 04
TAPESTRY AND TABLE COVERS.				
1892,	3	1,647 32	....	....
1893,	3	1,610 82	—36 50	....
1894,	3	1,353 30	—257 52	....
1895,	3	1,523 52	+170 22	....
1896,	3	1,430 26	—93 26	....
1897,	3	1,274 16	—156 10	....
1898,	3	1,275 60	+1 44	....
1899,	3	1,318 32	+42 72	....
1900,	3	1,417 56	+99 24	....
1901,	3	1,446 30	+28 74	—201 02
HOSIERY.				
1892,	13	1,021 18	....	....
1893,	13	917 74	—103 44	....
1894,	13	807 54	—110 20	....
1895,	13	846 87	+39 33	....
1896,	13	786 97	—59 90	....
1897,	13	813 95	+26 98	....
1898,	13	807 05	—6 90	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE BY SAME ESTABLISHMENTS FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production during the year to each employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
HOSIERY—Continued.				
1899,	13	$836 25	+$29 20	$
1900,	13	839 38	+3 13	....
1901,	13	882 27	+42 89	—138 91
HOSIERY AND KNIT GOODS.				
1892,	3	1,258 70	....	....
1893,	3	1,211 97	—46 73	....
1894,	3	1,129 68	—82 29	....
1895,	3	946 22	—183 46	....
1896,	3	1,014 46	+68 24	....
1897,	3	1,005 91	—8 55	....
1898,	3	1,107 64	+101 73	....
1899,	3	1,322 02	+214 38	....
1900,	3	1,121 48	—200 54	....
1901,	3	1,247 55	+126 07	—11 15
SILK BROAD GOODS.				
1892,	4	1,796 10	....	....
1893,	4	1,077 09	—719 01	....
1894,	4	1,815 05	+737 96	....
1895,	4	1,694 56	—120 49	....
1896,	4	1,553 14	—141 42	....
1897,	4	1,492 06	—61 08	....
1898,	4	1,536 61	+44 55	....
1899,	4	1,754 54	+217 93	....
1900,	4	1,644 56	—109 98	....
1901,	4	1,506 47	—138 09	—289 63

YEAR 1892.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.	Aggregate amount of wages paid.	Average yearly earnings.	Value of product.
Pig iron,	13	321	2,668	$1,222,091	$477 92	$10,537,537
Rolling mills—general product,	32	314	35,368	19,909,005	562 91	91,945,908
Iron and steel sheets and plates,	14	290	5,089	3,225,444	633 81	11,680,127
Plate and bar,	3	250	3,269	1,685,275	515 53	4,991,702
Steel,	13	281	13,075	6,601,181	504 87	24,711,579
Architectural cast and wrought iron work,	4	307	1,350	810,020	600,01	3,040,397
Iron forging,	4	262	583	379,070	650 21	1,053,091
Nails and spikes,	10	256	3,015	1,294,034	429 19	4,827,506
Nuts and bolts,	2	306	615	238,112	387 17	1,152,138
Pipes and tubes,	4	267	1,336	575,531	430 78	2,241,867
Iron foundries and machine works,	25	301	3,554	1,967,645	553 64	6,311,627
Stoves, ranges, heaters, etc.,	9	284	1,243	630,622	507 84	1,639,839
Hardware,	4	295	1,565	608,700	388 94	1,242,721
Malleable iron,	2	302	401	207,159	516 61	452,363
Saws, edge tools, etc.,	5	302	2,448	1,306,442	533 68	3,479,164
Metal and metallic goods,	8	321	1,726	833 385	482 84	3,027,395
Locomotives and engines,	14	305	11,591	6,941,946	598 90	17,176,167
Engines and boilers,	6	323	1,635	820,391	536 72	2,854,422
Boilers,	7	277	762	394,594	419 41	1,768,039
Bridges,	4	310	1,217	532,673	437 62	2,179,725
Car springs,	1	312	207	139,800	675 36	1 139,220
Car couplers,	1	310	663	361,838	545 00	1,455 135
Cars and car wheels,	8	301	3,566	1,901,062	533 11	7,920,412
Ship building,	1	310	440	242,258	550 80	501 753
Rubber boots and shoes,	1	250	325	141,784	436 25	749,235
Woolen yarns,	10	299	1,805	527,864	288 03	3,243,694
Cotton yarns,	3	296	259	84.571	326 53	564,857
Worsted yarns,	3	300	1,002	298,181	297 58	1,692,713
Miscellaneous yarns,	9	302	544	212,052	389 80	1,291,613
Hosiery,	13	296	2,914	770,891	261 85	3,006,3 6
Hosiery and knit goods,	3	300	595	197,312	331 61	748,926

YEAR 1892—Continued.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.	Aggregate amount of wages paid.	Average yearly earnings.	Value of product.
Carpets,	24	280	6,750	$2,573,458	$381 24	$11,614,157
Cotton and woolen goods,	12	301	1,397	483,504	346 10	2,207,731
Cotton goods,	17	303	4,308	1,656,805	384 58	9,394,632
Woolen goods,	16	299	5,573	1,593,364	350 51	9,548,695
Knit goods,	5	313	989	286,648	289 84	1,284,013
Worsted goods,	3	310	661	239,858	362 87	1,3 3,225
Mixed textiles,	9	303	2,024	712,059	351 81	3,378,3 8
Chenille goods,	5	322	1,577	648,492	411 21	2,280,994
Tapestry and table covers,	3	302	225	94,620	420 53	370,618
Silk broad goods,	4	304	1,736	430,455	247 96	3,118,034
Window glass, bottle and table goods,	17	253	6,512	3,013,108	462 70	5,919,793
Pianos and organs,	2	303	162	53,972	333 16	196,553
Carbons,	1	300	48	25,000	520 83	59,000
Totals,	354	294	136,882	$67,331,876	$491 90	$269,452,465

YEAR 1893.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.	Aggregate amount of wages paid.	Average yearly earnings.	Value of product.
Pig iron,	13	286	2,222	$968,289	$446 14	$8,026,593
Rolling mills—general product,	32	307	32,695	17,884,919	547 02	86,050,594
Iron and steel sheets and plates,	13	243	4,590	2,658,514	579 19	9,584,689
Plate and bar,	3	198	2,330	1,150,276	493 68	3,648,252
Steel,	14	270	10,585	5,234,148	494 49	18,805,567
Architectural cast and wrought iron work,	4	308	1,202	699,209	581 70	2,024,821
Iron forging,	4	244	507	302,651	596 95	789,496
Nails and spikes,	10	230	2,840	1,130,151	397 94	3,942,713
Nuts and bolts,	2	305	695	235,777	339 24	1,007,993
Pipes and tubes,	4	260	1,311	519,129	395 98	2,107,604
Iron foundries and machine works,	25	279	3,097	1,533,465	495 14	4,628,768
Stoves, ranges, heaters, etc., ..	9	272	1,361	674,514	496 33	1,525,391
Hardware,	4	249	1,544	581,468	376 59	1,145,987
Malleable iron,	2	262	362	167,644	463 11	362,608
Saws, edge tools, etc.,	5	284	2,210	1,166,262	527 72	3,203,476
Metal and metallic goods,	8	282	1,622	738,036	455 02	2,526,382
Locomotives and engines,	14	284	11,644	6,528,803	560 70	16,941,708
Engines and boilers,	6	289	1,384	658,487	510 03	2,296,655
Boilers,	7	250	722	285,385	393 67	1,514,899
Bridges,	4	305	971	413,517	425 86	2,009,234
Car springs,	1	312	187	104,498	558 81	704,754
Car couplers,	1	243	570	281,375	493 64	1,009,284
Cars and car wheels,	8	282	3,144	1,579,523	502 39	6,054,890
Ship building,	1	300	583	324,439	556 49	832,720
Rubber boots and shoes,	1	280	350	145,471	415 63	845,688
Woolen yarns,	10	245	1,471	428,848	291 53	2,441,663
Cotton yarns,	3	250	233	71,384	306 36	464,105
Miscellaneous yarns,	9	252	477	150,765	316 07	889,403
Hosiery,	13	261	2,647	660,803	249 64	2,429,258
Worsted yarns,	3	199	708	211,833	299 20	1,029,283
Hosiery and knit goods,	3	293	610	186,860	306 32	739,304

YEAR 1893—Continued.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.	Aggregate amount of wages paid.	Average yearly earnings.	Value of product.
Carpets,	24	218	5,660	$2,085,404	$368 45	$8,626,792
Cotton and woolen goods,	12	255	1,260	390,597	310 00	1,676,241
Cotton goods,	17	249	3,874	1,186,610	306 30	7,002,762
Woolen goods,	16	245	4,926	1,527,984	310 19	7,014,527
Knit goods,	5	278	973	255,438	262 53	1,037,753
Worsted goods,	3	222	386	135,561	351 18	754,032
Mixed textiles,	9	290	1,688	520,683	308 40	2,462,383
Chenille goods,	5	295	1,153	435,761	377 93	1,507,387
Tapestry and table covers,	3	291	187	68,484	312 98	301,223
Silk broad goods,	4	247	1,092	248,372	227 45	1,176,070
Window glass, bottle and table goods,	17	195	5,993	2,209,369	368 66	4,523,936
Pianos and organs,	2	280	162	50,583	312 24	170,969
Carbons,	1	300	50	27,000	540 00	70,000
Totals,	354	268	122,278	$56,818,289	$464 66	$226,017,762

YEAR 1894.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.	Aggregate amount of wages paid.	Average yearly earnings.	Value of product.
Pig iron,	13	301	1,751	$658,393	$382 09	$5,580,847
Rolling mills—general product,	32	300	30,120	14,537,538	482 65	72,055,767
Iron and steel sheets and plates,	14	267	4,294	2,251,379	524 31	7,798,069
Plate and bar,	3	232	1,785	696,970	401 71	2,505,387
Steel,	13	272	9,778	4,492,128	459 41	15,781,8[illegible]2
Architectural cast and wrought iron work,	4	307	976	488,190	500 19	1,407,416
Iron forging,	4	296	469	237,457	506 31	604,106
Nails and spikes,	10	228	2,305	770,354	334 21	3,275,789
Nuts and bolts,	2	288	560	208,854	372 95	844,7[illegible]2
Pipes and tubes,	4	268	1,263	513,268	406 38	1,927,748
Iron foundries and machine works,	25	282	2,603	1,313,309	504 53	3,699,595
Stoves, ranges, heaters, etc.,	9	210	1,238	526,222	425 06	1,218,872
Hardware,	4	205	1,464	494,538	337 79	1,040,023
Malleable iron,	2	247	293	129,634	442 44	2[illegible]6,371
Saws, edge tools, etc.,	5	286	1,965	872,555	444 05	2,402,820
Metal and metallic goods,	8	288	1,500	675,524	450 35	2,060,465
Locomotives and engines,	14	267	8,441	4,032,480	477 72	9,62[illegible],617
Engines and boilers,	6	298	992	521,260	528 49	1,625,120
Boilers,	7	220	691	220,692	319 23	1,046,140
Bridges,	4	305	647	262,240	405 31	1,292,171
Car springs,	1	255	108	49,664	459 85	331,010
Car couplers,	1	203	416	160,978	386 96	510,732
Cars and car wheels,	8	261	2,830	1,292,310	456 65	4,090,637
Ship building,	1	310	395	226,858	574 22	506,192
Rubber boots and shoes,	1	248	350	128,156	366 16	711,056
Woolen yarns,	10	277	1,148	286,557	249 61	1,999,184
Cotton yarns,	3	261	270	70,983	262 90	438,901
Worsted yarns,	3	277	722	201,584	279 20	1,031,841
Miscellaneous yarns,	9	262	418	138,072	330 31	764,435
Hosiery,	13	273	2,589	567,411	219 16	2,030,722
Hosiery and knit goods,	3	300	600	191,806	319 67	677,810

YEAR 1894—Continued.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.	Aggregate amount of wages paid.	Average yearly earnings.	Value of product.
Carpets,	24	258	5,326	$1,002,657	$355 30	$8,222,838
Cotton and woolen goods,	12	258	1,248	362,164	290 19	1,408,290
Cotton goods,	17	246	3,687	1,171,554	317 75	7,171,910
Woolen goods,	16	278	4,856	1,388,781	286 00	5,946,052
Knit goods,	5	254	807	205,732	254 93	8[illegible]2,353
Worsted goods,	3	237	461	158,743	344 35	942,475
Mixed textiles,	9	289	1,847	531,680	287 86	2,458,285
Chenille goods,	5	239	1,176	442,828	376 55	1,609,750
Tapestry and table covers,	3	300	229	91,722	400 53	309,906
Silk broad goods,	4	292	1,446	362,119	250 00	2,624,564
Window glass, bottle and table goods,	17	261	5,152	2,219,127	430 73	4,620,213
Pianos and organs,	2	259	162	46,187	285 10	139,818
Carbons,	1	300	55	29,000	527 28	85,000
Totals,	354	276	109,383	$45,220,667	$413 50	$155,626,971

YEAR—1895.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.	Aggregate amount of wages paid.	Average yearly earnings.	Value of product.
Pig iron,	13	327	2,269	$1,060,012	$488 66	$8,220,266
Rolling mills—general product,	32	310	35,123	17,620,324	501 65	84,689,471
Iron and steel sheets and plates,	14	307	4,869	2,728,209	560 32	10,604,551
Plate and bar,	3	257	2,263	864,145	381 86	3,059,825
Steel,	13	279	12,138	5,872,084	483 78	20,687,948
Architectural cast and wrought iron work,	4	306	1,438	786,657	547 05	1,930,661
Iron forging,	4	289	594	311,275	524 03	779,569
Nails and spikes,	10	220	2,422	848,142	350 18	3,630,012
Nuts and bolts,	2	291	638	257,202	403 13	1,107,466
Pipes and tubes,	4	288	1,454	646,083	444 34	2,527,318
Iron foundries and machine works,	25	299	3,066	1,571,056	512 41	4,342,835
Stoves, ranges, heaters, etc.,	9	229	1,285	575,802	448 09	1,4[illegible]1,181
Hardware,	4	260	1,586	589,411	371 63	1,255,661
Malleable iron,	2	272	367	185,490	505 42	367,157
Saws, edge tools, etc.,	5	294	2,188	1,078,514	538 62	2,911,563
Metal and metallic goods,	8	311	1,704	829,877	487 02	2,831,319
Locomotives and engines,	14	292	9,363	5,231,956	558 79	12,703,222
Engines and boilers,	6	292	1,226	647,889	533 66	1,923,041
Boilers,	7	205	694	253,044	364 61	991,505
Bridges,	4	303	970	450,391	464 32	1,733,317
Car springs,	1	277	107	67,556	631 36	496,984
Car couplers,	1	285	606	304,785	502 94	985,253
Cars and car wheels,	8	303	2,887	1,533,033	531 01	4,291,747
Ship building,	1	307	336	190,820	567 91	426,303
Rubber boots and shoes,	1	271	398	150,705	378 65	829,573
Woolen yarns,	10	293	1,616	424,006	262 38	2,600,417
Cotton yarns,	3	288	294	89,806	305 46	500,574
Worsted yarns,	3	301	1,006	278,890	277 22	1,299,324
Miscellaneous yarns,	9	284	445	159,564	358 57	898,508
Hosiery,	13	294	3,329	863,884	259 50	2,819,230
Hosiery and knit goods,	3	272	628	179,494	285 81	594,226

YEAR 1895—Continued.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.	Aggregate amount of wages paid.	Average yearly earnings.	Value of product.
Carpets,	24	277	5,907	$2,228,021	$374 48	$9,325,013
Cotton and woolen goods,	12	265	1,370	420,075	306 62	1,508,407
Cotton goods,	17	285	3,925	1,303,844	322 19	6,697,893
Woolen goods,	16	298	5,405	1,694,440	313 49	6,742,9[illegible]8
Knit goods,	5	283	1,051	288,841	274 82	1,080,020
Worsted goods,	3	265	547	192,633	352 16	1,026,041
Mixed textiles,	9	298	2,028	615,095	303 30	2,813,496
Chenille goods,	5	300	1,189	460,319	387 14	1,748,029
Tapestry and table covers,	3	295	326	124,723	382 64	456,668
Silk broad goods,	4	302	1,918	449,854	234 54	3,250,176
Window glass, bottle and table goods,	17	241	6,195	2,198,916	354 95	4,306,614
Pianos and organs,	2	290	142	49,644	349 61	161,111
Carbons,	1	300	49	28,000	571 43	76,500
Totals,	354	288	127,361	$56,704,511	$445 78	$222,730,930

YEAR 1896.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.	Aggregate amount of wages paid.	Average yearly earnings.	Value of product.
Pig iron,	13	293	2,242	$947,503	$422 61	$7,207,417
Rolling mills—general product,	32	308	34,755	17,829,462	513 00	88,725,133
Iron and steel sheets and plates,	14	258	4,522	2,390,653	528 67	8,740,803
Plate and bar,	3	229	1,295	596,165	460 36	2,822,922
Steel,	13	219	10,058	4,592,017	456 55	16,603,033
Architectural cast and wrought iron work,	4	305	1,298	718,716	553 71	2,236,372
Iron forging,	4	246	569	295,092	518 62	739,985
Nails and spikes,	10	205	1,891	527,201	278 79	2,124,658
Nuts and bolts,	2	298	530	211,195	398 48	845,826
Pipes and tubes,	4	296	1,326	658,449	421 15	2,937,296
Iron foundries and machine works,	25	289	2,794	1,384,299	495 45	3,515,683
Stoves, ranges, heaters, etc.,	9	222	1,296	559,614	431 80	1,383,157
Hardware,	4	260	1,464	506,748	346 14	1,129,798
Malleable iron,	2	270	445	206,976	465 11	414,786
Saws, edge tools, etc.,	5	279	2,171	1,083,069	498 88	2.731,311
Metal and metallic goods,	8	304	1,640	812,633	495 51	2,401,633
Locomotives and engines,	14	291	10,228	5,402,517	528 21	14,348,550
Engines and boilers,	6	291	1,326	647,307	488 16	2,070,170
Boilers,	7	209	747	231,665	310 13	1,040,575
Bridges,	4	285	738	293,005	397 03	1,332,526
Car springs,	1	255	115	76,031	661 14	517,221
Car couplers,	1	303	976	436,177	446 90	1,349 321
Cars and car wheels,	8	284	2,841	1,363,150	479 81	4,238,607
Ship building,	1	307	516	285,103	552 52	686,720
Rubber boots and shoes,	1	244	359	131,577	338 66	812,523
Woolen yarns,	10	269	1,331	408,385	306 83	2,338,390
Cotton yarns,	3	276	220	63,476	288 52	405,093
Worsted yarns,	3	246	665	157,080	236 21	796,376
Miscellaneous yarns,	9	214	378	130,224	344 51	701,547
Hosiery,	13	288	2.708	632,065	233 41	2,131,116
Hosiery and knit goods,	3	289	453	105,220	232 27	459 551

YEAR 1896—Continued.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.	Aggregate amount of wages paid.	Average yearly earnings.	Value of product.
Carpets,	24	263	5,362	$1,830,621	$341 41	$7,626,053
Cotton and woolen goods,	12	280	1,182	338 900	286 72	1,296,709
Cotton goods,	17	258	3,894	1,064,130	273 27	6,157,585
Woolen goods,	16	274	3,933	1,193,111	304 88	5,231,275
Knit goods,	5	261	973	228,053	234 38	948,460
Worsted goods,	3	220	389	132,290	340 08	637,323
Mixed textiles,	9	282	1,894	559,443	297 37	2,307,722
Chenille goods,	5	291	1,378	501,772	264 13	1,711,009
Tapestry and table covers,	3	289	296	115,266	389 07	423,356
Silk broad goods,	4	274	1,850	470 930	254 56	2,870,300
Window glass, bottle and table goods,	17	229	4,868	1,903,683	391 06	3,969,520
Pianos and organs,	2	208	126	51,392	407 87	13[illegible],808
Carbons,	1	310	50	24,000	480 00	30,000
Totals,	354	276	118,092	$52,102,865	$441 29	$211,252,732

YEAR 1897.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.	Aggregate amount of wages paid.	Average yearly earnings.	Value of product.
Pig iron,	13	319	1,904	$797,839	$419 03	$5,043,503
Rolling mills—general product,	32	311	35,579	17,159,786	482 30	93,540,222
Iron and steel sheets and plates,	14	271	5,205	2,569,347	493 63	9,668,031
Plate and bar,	3	285	1,360	626,280	460 50	3,162,028
Steel,	13	271	10,361	4,918,524	474 71	17,454,677
Architectural cast and wrought iron work,	4	304	1,086	597,775	550 44	1,847,959
Iron forging,	4	267	533	281,259	527 67	691,901
Nails and spikes,	10	243	1,714	503,927	346 52	2,897,207
Nuts and bolts,	2	304	576	200,064	347 33	858,788
Pipes and tubes,	4	278	1,357	642,407	473 40	2,701,883
Iron foundries and machine works,	25	298	3,002	1,513,104	504 03	4,055,129
Stoves, ranges, heaters, etc.,	9	236	1,278	574,595	448 97	1,414,639
Hardware,	4	261	1,569	555,295	353 98	1,078,827
Malleable iron,	2	273	431	208,714	484 25	404,410
Saws, edge tools, etc.,	5	274	2,126	988,912	465 15	2,527,680
Metal and metallic goods,	8	288	1,515	712,676	470 41	2,341,075
Locomotives and engines,	14	295	10,038	5,398,050	537 76	14,327,515
Engines and boilers,	6	297	1,205	552,180	458 24	1,778,989
Boilers,	7	248	652	236,863	363 29	887,529
Bridges,	4	305	630	75,270	436 94	1,181,470
Car springs,	1	244	125	69,144	553 15	428,271
Car couplers,	1	303	813	371,800	457 32	1,052,857
Cars and car wheels,	8	288	2,661	1,335,463	501 81	3,265,217
Window glass, bottle and table goods,	17	268	4,993	2,257,805	459 19	4,941,382
Ship building,	1	310	388	215,604	555 68	476,868
Pianos and organs,	2	298	125	52,502	420 02	145,713
Rubber boots and shoes,	1	222	375	103,639	276 37	619,765
Carbons,	1	310	50	24,000	480 00	75,000
Carpets,	24	291	5,496	1,983,366	360 88	8,670 971
Woolen yarns,	10	296	1,476	384,803	260 71	2,700 099
Cotton yarns,	3	297	255	78,009	305 92	483,9 0

YEAR 1897—Continued.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.	Aggregate amount of wages paid.	Average yearly earnings.	Value of product.
Worsted yarns,	3	288	728	$201,321	$276 54	$1,061,344
Miscellaneous yarns,	9	283	422	156,864	371 72	1,025,606
Woolen goods,	16	290	4,121	1,363,041	330 75	6,150,087
Cotton goods,	17	293	4,173	1,251,253	299 84	7,290,259
Cotton and woolen goods,	12	270	1,162	359,586	309 46	1,485,822
Worsted goods,	3	289	610	256,513	420 51	1,311,853
Knit goods,	5	271	1,010	247,615	245 16	1,077,426
Chenille goods,	5	301	1,542	575,861	373 04	1,800,173
Mixed textiles,	9	282	2,025	591,656	292 18	2,506,565
Tapestry and table covers,	3	291	393	161,275	410 37	500,746
Hosiery,	13	288	3,012	773,370	256 76	2,451,639
Hosiery and knit goods,	3	300	538	148,908	276 78	541,180
Silk broad goods,	4	303	2,667	632,685	237 23	3,979,336
Totals,	354	287	121,281	$52,138,941	$429 90	$222,995,654

YEAR 1898.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.
Pig iron,	13	344	2,124
Rolling mills—general product,	32	321	40,175
Iron and steel sheets and plates,	14	290	6,524
Plate and bar,	3	300	2,372
Steel,	13	282	12,176
Architectural cast and wrought iron work,	4	306	1,435
Iron forging,	4	293	668
Nails and spikes,	10	205	2,099
Nuts and bolts,	2	306	758
Pipes and tubes,	4	284	1,612
Iron foundries and machine works,	25	300	3,417
Stoves, ranges, heaters, etc.,	9	246	1,310
Hardware,	4	233	1,695
Malleable iron,	2	292	697
Saws, edge tools, etc.,	5	299	2,549
Metal and metallic goods,	8	309	1,609
Locomotives and engines,	14	301	12,397
Engines and boilers,	6	303	1,269
Boilers,	7	277	810
Bridges,	4	304	757
Car springs,	1	286	140
Car couplers,	1	303	783
Cars and car wheels,	8	297	3,572
Ship building,	1	307	810
Rubber boots and shoes,	1	244	400
Woolen yarns,	10	274	1.513

YEAR 1898.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Aggregate amount of wages paid.	Average yearly earnings.	Value of product.	Value of product during the year to each employe.	Average daily wage.
$950,759	$447 63	$8,307,428	$3,911 22	$1 30
20,005,631	497 96	111,954,871	2,786 68	1 55
3,402,674	521 56	13,760,272	2,109 18	1 80
1,082,343	456 30	3,018,260	1,272 43	1 52
$5,828,123	478 66	20,327,249	1,669 45	1 70
771,191	537 42	2,775,266	1,933 91	1 76
365,737	547 51	1,033,335	1,546 91	1 87
556,145	264 96	2,494,289	1,188 32	1 29
291,593	384 69	1,042,896	1,375 85	1 26
769,577	477 41	3,463,901	2,148 82	1 68
1,800,212	526 84	4,927,626	1,442 09	1 76
595,133	454 30	1,461,366	1,115 55	1 85
575,798	339 70	1,407,967	830 66	1 46
341,962	490 62	704,698	1,011 04	1 68
1,273,829	499 74	3,238,334	1,270 43	1 67
762,480	473 88	3,070,810	1,908 52	1 53
7,149,884	576 74	19,449,658	1,568 90	1 92
639,408	503 87	2,126,376	1,675 63	1 66
298,175	368 12	1,444,757	1,783 65	1 33
333,277	440 26	1,651,568	2,181 73	1 45
95,162	679 73	652,635	4,661 68	2 38
351,902	449 43	1,404,617	1,793 89	1 48
1,912,759	535 49	4,200,831	1,176 04	1 80
397,489	490 73	1,217,489	1,503 07	1 60
139,770	349 43	960,923	2,402 31	1 43
461,866	305 26	3,091,557	2,043 33	1 11

YEAR 1898—Continued.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.
Cotton yarns,	3	295	267
Worsted yarns,	3	256	713
Miscellaneous yarns,	9	263	393
Hosiery,	13	279	3,212
Hosiery and knit goods,	3	300	471
Carpets,	24	286	5,123
Cotton and woolen goods,	12	272	1,320
Cotton goods,	17	298	4,246
Woolen goods,	16	289	4,136
Knit goods,	5	253	980
Worsted goods,	3	273	583
Mixed textiles,	9	300	2,120
Chenille goods,	5	302	1,575
Tapestry and table covers,	3	291	462
Silk broad goods,	4	292	2,964
Window glass, bottle and table goods,	17	271	5,572
Pianos and organs,	2	296	127
Carbons,	1	310	50
Total and averages,	354	298	137,985

YEAR 1898—Continued.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Aggregate amount of wages paid.	Average yearly earnings.	Value of product.	Value of product during the year to each employe.	Average daily wage.
$82,051	$307 31	$447,456	$1,675 80	$1 04
175,310	245 88	853,230	1,196 68	0 96
133,248	339 05	802,170	2,041 14	1 29
807,402	251 37	2,592,249	807 05	90
134,120	284 76	521,697	1,107 64	95
1,824,963	356 23	8,147,236	1,590 33	1 25
416,500	315 53	1,584,830	1,200 63	1 16
1,373,237	323 42	7,459,927	1,756 93	1 09
1,384,116	334 65	6,266,213	1,515 04	1 16
247,184	252 23	1,045,926	1,067 27	1 00
244,146	418 78	1,311,890	2,250 24	1 53
632,258	298 23	2,777,338	1,310 06	99
561,012	356 20	1,990,273	1,263 67	1 18
180,225	390 10	589,330	1,275 60	1 34
724,004	244 27	4,554,525	1,536 61	84
2,525,933	453 33	5,690,250	1,021 22	1 67
54,027	425 41	151,011	1,189 06	1 44
24,000	480 00	70,000	1,400 00	1 55
$62,676,615	$454 52	$266,044,530	$1,929 33	$1 52

YEAR 1899.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.
Pig iron,	13	322	3,015
Rolling mills, general product,	32	324	43,533
Iron and steel sheets and plates,	14	294	8,327
Plate and bar,	3	302	2,709
Steel,	13	285	14,578
Architectural cast and wrought iron work,	4	305	1,755
Iron forgings,	4	295	670
Nails and spikes,	10	229	2,360
Nuts and bolts,	2	304	955
Pipes and tubes,	4	279	1,720
Iron foundries and machine works,	25	305	4,091
Stoves, ranges, heaters, etc.,	9	247	1,304
Hardware,	4	268	1,926
Malleable iron,	2	292	740
Saws, edged tools, etc.,	5	301	3,079
Metal and metallic goods,	8	324	1,809
Locomotives and engines,	14	306	14,795
Engines and boilers,	6	303	1,409
Boilers,	7	307	512
Bridges,	4	284	975
Car springs,	1	300	177
Car couplers,	1	303	905
Cars and car wheels,	8	304	3,184
Ship building,	1	302	915
Rubber boots and shoes,	1	243	500
Woolen yarns,	10	274	1,706

YEAR 1899.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Aggregate amount of wages paid.	Average yearly earnings.	Value of product.	Value of product during the year to each employe.	Average daily wage.
$1,502,193	$498 24	$14,277,497	$4,735 49	$1 55
26,368,594	605 72	169,222,486	3,887 22	1 87
4,781,188	574 18	22,050,830	2,648 11	1 95
1,391,372	513 21	5,472,624	2,020 16	1 70
7,540,393	517 24	29,873,149	2,049 20	1 81
971,114	553 34	3,143,891	1,791 39	1 81
373,752	557 84	1,806,887	2,696 85	1 89
800,175	339 06	3,363,000	1,552 12	1 48
520,681	545 22	1,686,712	1,766 19	1 80
831,654	483 52	4,625,429	2,689 20	1 73
2,198,285	537 35	6,795,327	1,661 04	1 76
635,413	487 28	1,798,904	1,379 53	1 97
753,877	391 42	2,019,722	1,048 66	1 46
389,287	521 83	887,905	1,190 22	1 79
1,583,828	514 40	4,559,222	1,480 75	1 71
896,108	495 36	4,101,137	2,267 07	1 53
8,797,896	594 65	25,412,790	1,717 66	1 94
728,062	516 72	2,792,857	1,982 15	1 71
237,840	464 53	1,273,424	2,487 16	1 51
408,803	419 29	2,748,096	2,818 56	1 48
129,115	729 46	1,045,408	5,906 26	2 43
449,000	496 13	1,668,325	1,843 45	1 64
1,763,251	553 78	5,329,637	1,673 88	1 82
483,200	528 09	1,507,546	1,647 59	1 75
175,876	351 75	1,082,260	2,164 52	1 45
524,527	307 46	4,042,767	2,369 73	1 12

YEAR 1899—Continued.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.
Cotton yarns,	3	306	264
Worsted yarns,	3	296	838
Miscellaneous yarns,	9	275	453
Hosiery,	13	280	3,204
Hosiery and knit goods,	3	300	456
Carpets,	24	299	6,178
Cotton and woolen goods,	12	274	1,262
Cotton goods,	17	299	4,296
Woolen goods,	16	287	4,350
Knit goods,	5	282	1,004
Worsted goods,	3	295	597
Mixted textiles,	9	300	2,431
Chenille goods,	5	292	1,614
Tapestry and table covers,	3	277	492
Silk broad goods,	4	301	3,191
Window glass, bottle and table goods,	17	264	5,979
Pianos and organs,	2	300	120
Carbons,	1	290	38
Totals,	354	301	154,422

YEAR 1899—Continued.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Aggregate amount of wages paid.	Average yearly earnings.	Value of product.	Value of product during the year to each employe.	Average daily wage.
$87,040	$329 70	$460,269	$1,743 44	$1 08
239,566	285 88	1,495,701	1,784 84	98
171,356	378 27	1,105,504	2,440 40	1 37
809,834	252 76	2,679,349	836 25	90
142,663	312 85	607,414	1,322 02	1 04
2,307,694	353 53	9,987,646	1,616 65	1 25
407,698	323 06	1,904,700	1,509 27	1 18
1,508,218	351 08	8,624,421	2,007 55	1 17
1,498,231	344 42	7,347,006	1,688 97	1 20
288,434	287 28	1,135,696	1,131 17	1 02
242,183	405 67	1,382,803	2,316 25	1 38
765,896	315 05	3,445,679	1,417 39	1 05
679,963	421 29	2,260,296	1,400 43	1 44
189,321	384 80	648,616	1,318 32	1 39
805,682	252 49	5,598,713	1,754 54	84
2,726,527	456 02	6,425,487	1,074 68	1 73
53,303	444 19	171,279	1,427 33	1 48
20,240	532 63	66,000	1,736 84	1 84
$78,179,333	$506 27	$377,934,411	$2,447 41	$1 68

YEAR 1900.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.
Pig iron,	13	316	3,057
Rolling mills, general product,	32	320	29,873
Iron and steel sheets and plates,	14	272	7,884
Plate and bar,	3	284	2,752
Steel,	13	281	8,138
Architectural cast and wrought iron work,	4	305	2,321
Iron forgings,	4	284	161
Nails and spikes,	10	208	2,647
Nuts and bolts,	2	295	1,268
Pipes and tubes,	4	283	2,052
Iron foundries and machine works,	25	303	4,113
Stoves, ranges, heaters, etc.,	9	224	308
Hardware,	4	247	1,706
Malleable iron,	2	273	616
Saws, edged tools, etc.,	5	309	3,168
Metal and metallic goods,	8	304	1,628
Locomotives and engines,	14	307	17,523
Engines and boilers,	6	302	1,592
Boilers,	7	308	618
Bridges,	4	297	1,492
Car springs,	1	305	174
Car couplers,	1	303	875
Cars and car wheels,	8	304	3,260
Ship building,	1	302	900
Rubber boots and shoes,	1	233	500
Woolen yarns,	10	299	2,128

YEAR 1900.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Aggregate amount of wages paid.	Average yearly earnings.	Value of product.	Value of product during the year to each employe.	Average daily wage.
$1,383,893	$455 97	$16,492,134	$5,394 88	$1 44
18,725,089	626 82	198,252,323	6,636 51	1 96
4,387,581	556 52	22,834,195	2,896 27	2 05
1,190,369	432 55	4,028,343	1,463 79	1 52
4,870,336	598 47	24,779,969	3,044 97	2 13
1,264,962	545 01	5,859,998	2,524 77	1 79
115,518	717 50	1,180,911	7,334 85	2 52
928,737	350 86	5,207,812	1,967 44	1 69
550,577	434 21	2,231,393	1,759 77	1 47
1,013,349	493 83	5,857,222	2,854 40	1 75
2,312,981	562 36	7,270,742	1,767 75	1 85
660,164	504 71	1,815,164	1,387 74	2 25
568,061	332 98	1,685,976	988 26	1 35
335,124	544 03	747,232	1,213 04	1 99
1,682,130	530 97	4,764,529	1,503 95	1 72
837,203	514 25	2,742,603	1,684 65	1 69
10,657,939	608 22	33,554,210	1,914 87	1 98
838,696	526 82	3,457,461	2,171 77	1 74
291,905	472 34	1,531,763	2,478 58	1 53
847,340	567 92	5,956,502	3,992 29	1 91
136,336	783 54	1,123,226	6,455 32	2 57
441,925	505 06	1,524,435	1,742 21	1 66
1,827,031	560 44	6,276,282	1,925 24	1 84
449,335	449 26	1,493,910	1,659 90	1 65
174,134	348 27	1,059,420	2,118 84	1 49
656,246	308 39	5,181,604	2,434 96	1 03

YEAR 1900—Continued.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.
Cotton yarns,	3	306	275
Worsted yarns,	3	295	796
Miscellaneous yarns,	9	268	374
Hosiery,	13	275	3,116
Hosiery and knit goods,	3	297	520
Carpets,	24	297	5,803
Cotton and woolen goods,	12	258	1,199
Cotton goods,	17	288	4,013
Woolen goods,	16	291	4,520
Knit goods,	5	285	1,268
Worsted goods,	3	258	450
Mixed textiles,	9	300	2,783
Chenille goods,	5	264	1,463
Tapestry and table covers,	3	252	470
Silk broad goods,	4	285	3,070
Window glass, bottle and table goods,	17	244	5,732
Pianos and organs,	2	304	171
Carbons,	1	284	37
Totals,	354	299	136,814

YEAR 1900—Continued.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Aggregate amount of wages paid.	Average yearly earnings.	Value of product.	Value of product during the year to each employe.	Average daily wage.
$93,589	$340 32	$571,569	$2,078 43	$1 11
235,574	295 95	1,508,244	1,894 78	1 00
150,158	401 79	1,012,111	2,706 18	1 50
839,341	269 36	2,615,498	839 38	98
151,853	292 02	583,170	1,121 48	98
2,232,351	384 69	9,652,462	1,663 36	1 30
388,539	324 05	1,751,815	1,461 06	1 26
1,367,545	340 78	7,378,078	1,838 54	1 18
1,640,171	362 87	7,198,316	1,592 55	1 25
316,613	249 69	1,326,416	1,046 07	88
186,074	413 50	1.098,506	2,441 12	1 60
857,228	308 02	3,683,594	1,323 61	1 03
588,939	402 55	1,926,687	1,316 94	1 52
196,420	417 92	666,255	1,417 56	1 66
734,974	239 41	5,028,800	1,644 56	84
2,470,306	430 97	5,583,805	974 15	1 77
72,290	422 75	215,387	1,259 57	1 39
18,559	501 60	60,167	1,626 13	1 77
$69,697,485	$509 43	$418,790,239	$3,061 02	$1 70

YEAR 1901.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.
Pig iron ,..................................	13	337	2,459
Rolling mills, general product, ...	32	316	38,724
Iron and steel sheets and plates, ...	14	278	9,456
Plate and bar, ...	3	291	1,595
Steel, ...	13	296	17,480
Architectural cast and wrought iron work, ..	4	306	2,601
Iron forgings, ...	4	295	160
Nails and spikes, ...	10	266	1,607
Nuts and bolts, ...	2	286	1,021
Pipes and tubes, ...	4	303	2,364
Iron foundries and machine works, ...	25	303	4,477
Stoves, ranges, heaters, etc., ...	9	234	1,324
Hardware, ...	4	293	1,751
Malleable iron, ...	2	302	799
Saws, edged tools, etc., ...	5	301	3,360
Metal and metallic goods, ...	8	326	1,622
Locomotives and engines, ...	14	304	19,058
Engines and boilers, ...	6	301	1,701
Boilers.	7	308	708
Bridges, ...	4	309	1,459
Car springs, ...	1	303	178
Car couplers, ...	1	303	810
Cars and car wheels, ...	8	305	3,334
Ship building, ...	1	313	731
Rubber boots and shoes, ...	1	268	513
Woolen yarns, ...	10	296	1,959

YEAR 1901.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Aggregate amount of wages paid.	Average yearly earnings.	Value of product.	Value of product during the year to each employe.	Average daily wage.
$1,418,147	$576 72	$13,645,721	$5,549 30	$1 71
26,800,981	692 10	196,936,504	5,085 39	2 19
5,458,771	577 28	28,209,826	2,983 27	2 08
1,022,587	641 12	4,246,894	2,262 63	2 20
9,717,909	555 94	37,692,910	2,156 34	1 88
1,408,076	541 36	7,210,281	2,772 12	1 77
118,476	740 47	1,127,833	7,048 96	2 51
712,083	443 11	3,036,702	1,889 68	1 67
414,917	406 38	2,184,110	2,139 19	1 42
1,231,972	521 14	6,052,557	2,560 03	1 72
2,540,406	567 43	7,423,400	1,658 12	1 87
663,735	501 31	1,756,821	1,326 90	2 14
698,125	398 70	1,928,480	1,101 36	1 36
441,888	553 05	860,568	1,077 06	1 83
1,772,047	527 39	5,095,464	1,516 51	1 75
824,729	508 46	2,785,309	1,717 21	1 56
11,930,091	625 99	37,028,910	1,942 96	2 06
903,156	530 96	3,392,325	1,994 31	1 76
342,918	484 35	1,885,929	2,663 74	1 57
807,450	553 43	3,575,000	2,450 30	1 79
146,451	822 76	1,070,693	6,015 13	2 72
393,000	485 19	1,052,300	1,299 14	1 60
1,880,715	564 10	5,739,513	1,721 50	1 85
365,911	500 56	1,170,750	1,601 57	1 60
182,887	356 50	941,993	1,836 24	1 33
610,422	311 63	4,781,637	2,440 86	1 05

YEAR 1901—Continued.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Character of Industries.	Number of establishments considered.	Average number of days in operation.	Total number of persons employed.
Cotton yarns,	3	288	257
Worsted yarns,	3	297	849
Miscellaneous yarns,	9	289	381
Hosiery,	13	290	2,900
Hosiery and knit goods,	3	298	478
Carpets,	24	290	5,956
Cotton and woolen goods,	12	263	1,165
Cotton goods,	17	282	3,850
Woolen goods,	16	280	4,544
Knit goods,	5	257	1,064
Worsted goods,	3	253	416
Mixed textiles,	9	289	2,644
Chenille goods,	5	281	1,492
Tapestry and table covers,	3	277	316
Silk broad goods,	4	268	3,285
Window glass, bottles and table goods,	17	235	5,367
Pianos and organs,	2	299	171
Carbons,	1	294	38
Totals,	354	296	156,424

YEAR 1901—Continued.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS.

Aggregate amount of wages paid.	Average yearly earnings.	Value of product.	Value of product during the year to each employe.	Average daily wage.
$88,159	$343 03	$479,046	$1,863 99	$1 19
238,632	281 07	1,419,743	1,672 25	95
156,599	411 02	1,025,967	2,692 83	1 42
793,487	273 62	2,558,590	882 27	94
147,857	309 32	596,327	1,247 55	1 04
2,321,117	389 71	9,718,668	1,613 74	1 34
362,067	310 79	1,640,565	1,408 21	1 18
1,357,230	352 53	8,250,689	2,143 04	1 25
1,610,162	354 35	7,845,888	1,726 65	1 27
245,641	230 87	973,529	914 97	90
173,828	417 86	929,687	2,234 82	1 65
830,012	313 92	3,736,137	1,413 06	1 08
625,897	419 50	2,105,386	1,411 12	1 49
134,625	426 34	457,030	1,446 30	1 54
761,327	231 76	4,948,756	1,506 47	86
2,471,234	460 45	5,204,192	969 66	1 96
74,851	437 73	211,177	1,234 95	1 46
19,394	510 37	60,846	1,601 21	1 74
$85,219,969	$544 80	$432,994,653	$2,768 08	$1 84

RESUME.

THE SAME ESTABLISHMENTS FOR THE YEARS 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Years.	Number of establishments considered.	Total number of persons employed.	Aggregate amount of wages paid.	Average yearly earnings.	Value of product.
1892,	354	136,882	$67,331,876	$491 90	$269,452,465
1893,	354	122,278	56,818,289	464 66	226,017,762
1894,	354	109,383	45,229,667	413 15	185,626,971
1895,	354	127,361	56,704,511	445 78	222,730,930
1896,	354	118,092	52,102,365	441 29	211,252,732
1897,	354	121,281	52,138,941	429 90	222,995,654
1898,	354	137,985	62,676,615	454 52	266,044,530
1899,	354	154,422	78,179,333	506 27	377,934,411
1900,	354	136,814	69,697,485	509 43	418,790,239
1901,	354	156,424	85,219,969	544 80	432,994,658

COMPARISON OF TOTALS, ALL ESTABLISHMENTS (354), FOR THE YEARS ENDING, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901.

Years.	Number of establishments considered.	Total persons and amounts.	Increase (+) or decrease (—) as compared with the preceding year.		Increase (+) or decrease (—) 1901 as compared with 1892.	
			Persons and amounts.	Percentage.	Persons and amounts.	Percentage.
		PERSONS EMPLOYED.				
1892,	354	136,882	....	....	....	....
1893,	354	122,278	—14,604	—10.67	....	....
1894,	354	109,383	—12,895	—10.55	....	....
1895,	354	127,361	+17,978	+16.44	....	....
1896,	354	118,092	—9,269	—7.28	....	....
1897,	354	121,281	+3,189	+2.70	....	....
1898,	354	137,985	+16,704	+13.69	....	....
1899,	354	154,422	+16,437	+11.99	....	....
1900,	354	136,814	—17,608	—11.40	....	....
1901,	354	156,424	+19,610	+14.33	+19,542	+14.27
		AGGREGATE WAGES PAID.				
1892,	354	$67,331,876	....	....	....	....
1893,	354	56,818,289	—$10,513,587	—15.61	....	....
1894,	354	45,229,667	—11,588,622	—20.40	....	....
1895,	354	56,704,511	+11,474,844	+25.37	....	....
1896,	354	52,102,365	—4,602,146	—8.12	....	....
1897,	354	52,138,941	+36,576	+0.07	....	....
1898,	354	62,676,615	+10,537,674	+20.21	....	....
1899,	354	78,179,333	+15,502,718	+24.73	....	....
1900,	354	69,697,485	—8,481,848	—10.85	....	....
1901,	354	85,219,969	+15,522,484	+22.27	+$17,888,093	+26.56
		AVERAGE YEARLY EARNINGS.				
1892,	354	$491 90	....	....	....	....
1893,	354	464 66	—$27 24	—5.54	....	....
1894,	354	413 50	—51 16	—11.01	....	....
1895,	354	445 78	+32 28	+7.81	....	....
1896,	354	441 29	—4 49	—1.01	....	....
1897,	354	429 90	—11 39	—2.58	....	....
1898,	354	454 52	+24 62	+5.73	....	....
1899,	354	506 27	+51 75	+11.38	....	....
1900,	354	509 43	+3 16	+0.62	....	....
1901,	354	544 80	+35 37	+6.94	+$52 90	+10.75

COMPARISON OF TOTALS, ALL ESTABLISHMENTS (354), FOR THE YEARS ENDING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900 AND 1901—Continued.

Years.	Number of establishments considered.	Total persons and amounts.	Increase (+) or decrease (—) as compared with the preceding year.		Increase (+) or decrease (—) 1901 as compared with 1892.	
			Persons and amounts.	Percentage.	Persons and amounts.	Percentage.
		VALUE OF PRODUCT.				
1892, ...	354	$269,452,465	....	....	....	....
1893, ...	354	226,017,762	—$43,434,703	—16.12	....	....
1894, ...	354	185,626,971	—40,390,791	—17.87	....	....
1895, ...	354	222,730,930	+37,103,959	—19.99	....	....
1896, ...	354	211,252,732	—11,478,198	—5.15	....	....
1897, ...	354	222,995,654	+11,742,922	+5.56	....	....
1898, ...	354	266,044,530	+43,048,876	+19.30	....	....
1899, ...	354	377,934,411	+111,889,881	+42.06	....	....
1900, ...	354	418,790,239	+40,855,828	+10.81	....	....
1901, ...	354	432,994,653	+14,204,414	+3.39	+$163,542,188	+60.69

1896 SERIES.

CAPITAL INVESTED.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

(NOTE...In this table the aggregate amount of capital invested by the same establishments for the years 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1896. Eightyeight industries, representing 801 establishments, are considered.)

'haracter of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
STEEL CASTINGS.				
1896,	7	$5,744,982	$	$
1897,	7	5,316,197	—428,785	....
1898,	7	5,354,846	+38,649	....
1899,	7	5,393,523	+38,677	....
1900,	7	5,394,265	+742	....
1901,	7	5,394,265	....	—350,717
STEEL BILLETS, SLABS, BLOOMS, ETC.				
1896,	4	13,137,175	....	....
1897,	4	13,218,900	+81,725	....
1898,	4	12,718,900	—500,000	....
1899,	4	13,318,900	+600,000	....
1900,	4	13,791,119	+472,219	....
1901,	4	13,791,119	....	+653,944
TOOL STEEL.				
1896,	3	480,000	....	....
1897,	3	608,000	+128,000	....
1898,	3	690,000	+82,000	....
1899,	3	690,000	....	....

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
TOOL STEEL—Continued.				
1900,	3	$1,050,000	+$360,000	$
1901,	3	1,050,000	....	+570,000
IRON AND STEEL FORGINGS.				
1896,	7	431,000	....	....
1897,	7	430,000	—1,000	....
1898,	7	482,850	+52,850	....
1899,	7	491,800	+8,950	....
1900,	7	496,100	+4,300	....
1901,	7	585,000	+88,900	+154,000
IRON SPECIALTIES.				
1896,	2	35,000	....	....
1897,	2	45,000	+10,000	....
1898,	2	45,000	....	....
1899,	2	45,000	....	....
1900,	2	45,500	+500	....
1901,	2	55,500	+10,000	+20,500
MALLEABLE IRON.				
1896,	4	440,000	....	....
1897,	4	493,925	+53,925	....
1898,	4	532,600	+38,675	....
1899,	4	1,527,533	+994,933	....
1900,	4	1,524,280	—3,253	....
1901,	4	1,594,090	+69,810	+1,154,090

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BOLTS, NUTS, ETC.				
1896,	8	$1,885,950	$	$
1897,	8	1,918,214	+32,264	....
1898,	8	1,957,776	+39,562	....
1899,	8	2,192,934	+235,158	....
1900,	8	2,359,574	+166,640	....
1901,	8	2,377,009	+17,435	+491,059
WIRE NAILS, RIVETS, ETC.				
1896,	4	1,005,000	....	....
1897,	4	1,015,000	+10,000	....
1898,	4	1,012,950	—2,050	....
1899,	4	1,045,000	+32,050	....
1900,	4	1,025,000	—20,000	....
1901,	4	535,000	—490,000	—470,000
TACKS AND SMALL NAILS.				
1896,	4	163,500	....	....
1897,	4	163,500	....	....
1898,	4	123,500	—40,000	....
1899,	4	163,500	+40,000	....
1900,	4	163,500	....	....
1901,	4	158,500	—5,000	—5,000
WIRE.				
1896,	5	480,000	....	....
1897,	5	482,100	+2,100	....
1898,	5	495,600	+13,500	....

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WIRE—Continued.				
1899,	5	$605,900	+$110,300	$
1900,	5	611,900	+6,000	....
1901,	5	618,100	+6,200	+138,100
WIRE ROPE.				
1896,	2	690,000	....	....
1897,	2	700,000	+10,000	....
1898,	2	700,000	....	....
1899,	2	700,000	....	....
1900,	2	1,100,000	+400,000	....
1901,	2	1,400,000	+300,000	+710,000
WIRE GOODS.				
1896,	5	150,950	....	....
1897,	5	154,450	+3,500	....
1898,	5	155,050	+600	....
1899,	5	170,550	+15,500	....
1900,	5	167,916	—2,634	....
1901,	5	169,989	+2,073	+19,039
WAGON AND CARRIAGE AXLES AND SPRINGS.				
1896,	6	594,475	....	....
1897,	6	594,475	....	....
1898,	6	604,475	+10,000	....
1899,	6	614,000	+9,525	....
1900,	6	606,454	+7,546	....
1901,	6	618,462	+12,008	+23,987

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SCALES, ETC.				
1896,	4	$166,000	$	$
1897,	4	171,000	+5,000	....
1898,	4	176,000	+5,000	....
1899,	4	206,000	+30,000	....
1900,	4	216,000	+10,000	....
1901,	4	217,600	+1,600	+51,600
STOVES, RANGES, HEATERS, ETC.				
1896,	37	5,457,362	....	....
1897,	37	5,520,359	+62,997	....
1898,	37	5,592,761	+72,402	....
1899,	37	5,528,895	—63,866	....
1900,	37	7,360,316	+1,831,421	....
1901,	37	7,348,895	—11,421	+1,891,533
BATH BOILERS, TANKS, ETC.				
1896,	2	52,820	....	....
1897,	2	54,000	+1,180	....
1898,	2	54,000	....	....
1899,	2	59,000	+5,000	....
1900,	2	59,000	....	....
1901,	2	59,000	....	+6,180
HARDWARE SPECIALTIES.				
1896,	14	3,077,418	....	....
1897,	14	3,246,189	+168,771	....
1898,	14	3,337,946	+91,757	....
1899,	14	3,559,734	+221,788	....

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
HARDWARE SPECIALTIES—Continued.				
1900,	14	$4,045,685	+$485,951	$
1901,	14	3,971,920	—73,765	+894,502
EDGE TOOLS.				
1896,	12	1,675,197	....	....
1897,	12	1,613,064	—62,133	....
1898,	12	1,646,820	+33,756	....
1899,	12	1,233,793	—413,027	....
1900,	12	1,689,815	+456,022	....
1901,	12	1,725,640	+35,825	+50,443
WRENCHES, PICKS, ETC.				
1896,	5	564,000	....	....
1897,	5	571,000	+7,000	....
1898,	5	571,000	....	....
1899,	5	571,000	....	....
1900,	5	575,000	+4,000	....
1901,	5	575,000	....	+11,000
LOCOMOTIVES AND CARS BUILT AND REPAIRED.				
1896,	3	1,464,400	....	....
1897,	3	1,464,400	....	....
1898,	3	1,442,800	—21,600	....
1899,	3	1,461,400	+18,600	....
1900,	3	1,461,400	....	....
1901,	3	1,520,800	+59,400	+56,400

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WROUGHT IRON PIPE AND TUBES.				
1896,	5	$13,555,000	$	$
1897,	5	13,505,000	—50,000	....
1898,	5	13,505,000	....	....
1899,	5	14,101,131	+596,131	....
1900,	5	14,101,131	....	....
1901,	5	14,101 131	....	+546,131
CAST IRON PIPE.				
1896,	3	340,000	....	....
1897,	3	613,059	+273,059	....
1898,	3	641,710	+28,651	....
1899,	3	896,776	+255,066	....
1900,	3	896,776	....	....
1901,	3	916,776	+20,000	+576,776
BRASS, COPPER AND BRONZE GOODS.				
1896,	19	1,853,192	....	....
1897,	19	1,845,192	—8,000	....
1898,	19	1,853,450	+8,258	....
1899,	19	1,877,750	+24,300	....
1900,	19	2,010,167	+132,417	....
1901,	19	2,161,666	+151,499	+308,474
IRON AND STEEL BRIDGES.				
1896,	7	961,050	....	....
1897,	7	961,050	....	....

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON AND STEEL BRIDGES—Continued.				
1898,	7	$961,050	$	$
1899,	7	1,001,050	+40,000	....
1900,	7	1,901,050	+900,000	....
1901,	7	1,951,050	+50,000	+990,000
LOCOMOTIVES, STATIONERY ENGINES, ETC.				
1896,	9	11,222,730	....	....
1897,	9	11,643,157	+420,427	....
1898,	9	12,118,787	+475,630	....
1899,	9	12,956,218	+837,431	....
1900,	9	13,417,380	+461,162	....
1901,	9	15,440,434	+2,023,054	+4,217,704
ENGINES, BOILERS, ETC.				
1896,	10	3,908,988	....	....
1897,	10	3,924,988	+16,000	....
1898,	10	3,930,783	+5,795	....
1899,	10	4,036,999	+106,216	....
1900,	10	4,114,000	+77,001	....
1901,	10	4,337,000	+223,000	+428,012
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES.				
1896,	12	6,310,325	....	....
1897,	12	5,840,116	—470,209	....
1898,	12	5,872,258	+32,142	....
1899,	12	27,585,264	+21,713,006	....

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES — Continued.				
1900,	12	$27,971,682	+$386,418	$
1901,	12	23,482,047	—4,489,635	+17,171,722
IRON VESSELS AND ENGINES.				
1896,	3	7,039,973	....	....
1897,	3	7,274,993	+235,020	....
1898,	3	7,262,278	—12,715	....
1899,	3	7,866,622	+604,344	....
1900,	3	10,973,657	+3,107,035	....
1901,	3	12,247,131	+1,273,474	+5,207,158
BOILERS, TANKS, STACKS, ETC.				
1896,	21	1,544,562	....	....
1897,	21	1,624,265	+79,703	....
1898,	21	1,656,210	+31,945	....
1899,	21	1,857,238	+201,028	....
1900,	21	2,022,964	+165,726	....
1901,	21	2,640,108	+617,144	+1,095,546
MACHINERY				
1896,	21	8,798,408	....	....
1897,	21	8,921,924	+123,516	....
1898,	21	9,297,253	+375,329	....
1899,	21	9,650,673	+353,420	....
1900,	21	10,418,419	+767,746	....
1901,	21	11,451,866	+1,033,447	+2,653,458

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
FOUNDRIES AND MACHINE SHOPS.				
1896,	25	$3,041,550	$	$
1897,	25	3,062,486	+20,936	....
1898,	25	3,161,069	+98,583	....
1899,	25	3,621,293	+460,224	....
1900,	25	3,939,754	+318,461	....
1901,	25	4,236,490	+296,736	+1,194,940
FILES, ETC.				
1896,	2	510,000	....	....
1897,	2	510,000	....	....
1898,	2	512,000	+2,000	....
1899,	2	512,000	....	....
1900,	2	512,000	....	....
1901,	2	515,000	+3,000	+5,000
SAWS.				
1896,	3	310,000	....	....
1897,	3	335,000	+25,000	....
1898,	3	335,000	....	....
1899,	3	335,000	....	....
1900,	3	334,000	—1,000	....
1901,	3	334,000	....	+24,000
PLUMBER SUPPLIES.				
1896,	3	2,105,078	....	....
1896,	3	2,105,078	....	....
1898,	3	2,031,622	—12,129	....

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
PLUMBER SUPPLIES—Continued.				
1899,	3	$2,080,669	+$49,047	$
1900,	3	2,266,837	+186,168	....
1901,	3	2,274,610	+7,773	+169,532
ELECTRICAL SUPPLIES.				
1896,	4	12,815,696	....	....
1897,	4	12,848,743	+33,047	....
1898,	4	13,893,503	+1,044,760	....
1899,	4	14,018,383	+124,880	....
1900,	4	15,032,833	+1,014,450	....
1901,	4	18,488,343	+3,455,510	+5,672,647
SHOVELS, SPADES, SCOOPS, ETC.				
1896,	8	651,100	....	....
1897,	8	651,100	....	....
1898,	8	648,100	—3,000	....
1899,	8	648,100	....	....
1900,	8	741,100	+93,000	....
1901,	8	766,100	+25,000	+115,000
SAFES AND VAULT DOORS.				
1896,	2	80,000	....	....
1897,	2	68,000	—12,000	....
1898,	2	68,000	....	....
1899,	2	68,000	....	....
1900,	2	173,397	+105,397	....
1901,	2	178,262	+4,865	+98,262

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1596, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
METAL AND METALLIC GOODS.				
1896,	3	$280,400	$	$
1897,	3	280,400	....	....
1898,	3	390,000	+109,600	....
1899,	3	390,000	....	....
1900,	3	390,000	....	....
1901,	3	390,000	....	+109,600
BUILDING AND STRUCTURAL IRON WORKS.				
1896,	2	823,000	....	....
1897,	2	823,000	....	....
1898,	2	823,000	....	....
1899,	2	823,000	....	....
1900,	2	823,000	....	....
1901,	2	833,950	+10,950	+10,950
IRON CHAINS.				
1896,	5	253,542	....	....
1897,	5	258,542	+5,000	....
1898,	5	264,542	+6,000	....
1899,	5	264,542	....	....
1900,	5	334,798	+70,256	....
1901,	5	351,174	+16,376	+97,632
IRON FENCES AND RAILINGS.				
1896,	7	40,500	....	....
1897,	7	42,500	+2,000	....
1898,	7	46,000	+3,500	....

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON FENCES AND RAILINGS —Continued.				
1899,	7	$49,300	+$3,300	$
1900,	7	56,500	+7,200	....
1901,	7	113,628	+57,128	+72,128
AGRICULTURAL IMPLEMENTS.				
1896,	12	1,905,000	....	....
1897,	12	1,907,000	+2,000	....
1898,	12	1,943,000	+36,000	....
1899,	12	1,703,000	—240,000	....
1900,	12	2,035,000	+332,000	....
1901,	12	2,189,000	+154,000	+284,000
STEAM PUMPS.				
1896,	2	280,000	....	....
1897,	2	376,974	+96,974	....
1898,	2	380,871	+3,897	....
1899,	2	433,343	+52,472	....
1900,	2	479,015	+45,672	....
1901,	2	503,522	+24,507	+223,522
BICYCLES.				
1896,	3	200,000	....	....
1897,	3	253,000	+53,000	....
1898,	3	255,000	+20,000	....
1899,	3	255,000	....	....
1900,	3	255,000	....	....
1901,	3	240,000	—15,000	+40,000

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
PIANOS AND ORGANS.				
1896,	2	$51,000	$	$
1897,	2	51,000	....	....
1898,	2	117,000	+66,000	....
1899,	2	141,000	+24,000	....
1900,	2	246,000	+105,000	....
1901,	2	358,081	+112,081	+307,081
TINWARE.				
1896,	5	372,700	....	....
1897,	5	374,000	+1,300	....
1898,	5	374,000	....	....
1899,	5	414,000	+40,000	....
1900,	5	434,000	+20,000	....
1901,	5	578,000	+144,000	+205,300
PAPER MANUFACTORIES.				
1896,	8	4,257,961	....	....
1897,	8	4,425,013	+167,052	....
1898,	8	4,771,595	+346,582	....
1899,	8	5,082,399	+310,804	....
1900,	8	5,666,232	+583,833	....
1901,	8	5,799,229	+132,997	+1,541,268
WALL PAPER.				
1896,	4	310,000	....	....
1897,	4	395,000	+85,000	....
1898,	4	410,500	+15,500	....
1899,	4	440,000	+29,500	....

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WALL PAPER—Continued.				
1900,	4	$800,000	+$360,000	$
1901,	4	800,000	....	+490,000
CIGARS.				
1896,	46	2,805,477	....	....
1897,	46	3,025,250	+219,773	....
1898,	46	3,044,190	+18,940	....
1899,	46	3,347,204	+303,014	....
1900,	46	3,669,420	+322,216	....
1901,	46	4,071,578	+402,158	+1,266,101
BOOK BINDING.				
1896,	3	125,000	....	....
1897,	3	126,500	+1,500	....
1898,	3	130,000	+3,500	....
1899,	3	131,800	+1,800	....
1900,	3	136,250	+4,450	....
1901,	3	140,000	+3,750	+15,000
CORDAGE ROPE AND TWINE.				
1896,	5	3,260,000	....	....
1897,	5	3,260,000	....	....
1898,	5	3,260,000	....	....
1899,	5	3,435,000	+175,000	....
1900,	5	3,410,000	—25,000	....
1901,	5	3,510,000	+100,000	+250,000

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
PAPER, PAPER BOXES, ENVELOPES, ETC.				
1896,	27	$1,491,067	$	$
1897,	27	1,504,284	+13,217	....
1898,	27	1,489,559	—14,725	....
1899,	27	1,873,115	+383,556	....
1900,	27	1,933,681	+60,566	....
1901,	27	1,512,207	—421,474	+21,140
POTTERY.				
1896,	2	510,000	....	....
1897,	2	560,000	+50,000	....
1898,	2	560,000	....	....
1899,	2	510,000	—50,000	....
1900,	2	505,000	—5,000	....
1901,	2	505,000	....	—5,000
PAVING BRICK.				
1896,	7	481,200	....	....
1897,	7	521,500	+40,300	....
1898,	7	549,644	+28,144	....
1899,	7	614,478	+64,834	....
1900,	7	642,074	+27,596	....
1901,	7	638,707	—3,367	+157,507
BUILDING BRICK.				
1896,	35	3,630,700	....	....
1897,	35	3,661,347	+30,647	....
1898,	35	3,714,386	+53,039	....

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BUILDING BRICK—Continued.				
1899,	35	$3,838,184	+$123,798	$
1900,	35	3,845,898	+7,714	....
1901,	35	3,652,539	—193,359	+21,839
FIRE BRICK.				
1896,	18	2,240,600	....	....
1897,	18	2,421,783	+181,183	....
1898,	18	2,556,283	+134,500	....
1899,	18	2,746,876	+190,593	....
1900,	18	2,746,876	+188,356	....
1901,	18	2,998,426	+63,194	+757,826
SLATE ROOFING, ETC., TONNAGE.				
1896,	6	1,021,451	....	....
1897,	6	1,041,800	+20,349	....
1898,	6	1,022,007	—19,793	....
1899,	6	831,112	—190,895	....
1900,	6	974,100	+142,988	....
1901,	6	1,043,453	+69,353	+22,002
SLATE ROOFING, ETC., SQUARES.				
1896,	14	511,916	....	....
1897,	14	513,914	+1,998	....
1898,	14	704,913	+190,999	....
1899,	14	534,914	—169,999	....
1900,	14	630,914	+96,000	....
1901,	14	553,814	—77,100	+41,898

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WINDOW GLASS, BOTTLES AND TABLE GOODS.				
1896,	22	$13,439,300	$	$
1897,	22	13,454,382	+15,082	....
1898,	22	13,607,329	+152,947	....
1899,	22	13,677,194	+69,865	....
1900,	22	14,972,077	+1,294,883	....
1901,	22	13,706,456	—1,265,621	+267,156
GLAZED AND CHROME KID.				
1896,	7	3,857,983	....	....
1897,	7	4,068,915	+210,932	....
1898,	7	4,163,993	+95,078	....
1899,	7	4,609,490	+445,497	....
1900,	7	4,861,913	+252,423	....
1901,	7	5,931,303	+1,069,390	+2,073,320
MEN'S, WOMEN'S, MISSES' AND CHILDREN'S SHOES.				
1896,	15	2,193,113	....	....
1897,	15	2,254,701	+61,588	....
1898,	15	2,350,481	+95,780	....
1899,	15	2,446,081	+95,600	....
1900,	15	2,440,783	—5,298	....
1901,	15	2,490,918	+50,135	+297,805
SUSPENDERS.				
1896,	2	82,000	....	....
1897,	2	92,000	+10,000	....

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SUSPENDERS—Continued.				
1898,	2	$95,000	+$3,000	$
1899,	2	120,000	+25,000	....
1900,	2	150,000	+30,000	....
1901,	2	170,500	+20,500	+88,500
HATS AND CAPS.				
1896,	3	273,592	....	....
1897,	3	307,789	+34,197	....
1898,	3	296,776	—11,013	....
1899,	3	307,676	+10,900	....
1900,	3	360,735	+53,059	....
1901,	3	375,548	+14,813	+101,956
FUR AND FELT HATS.				
1896,	4	2,773,726	....	....
1897,	4	2,782,743	+9,017	....
1898,	4	2,775,406	—7,337	....
1899,	4	2,775,439	+33	....
1900,	4	3,077,842	+302,403	....
1901,	4	3,074,328	—3,514	+300,602
WOOL HATS.				
1896,	7	338,997	....	....
1897,	7	424,035	+85,038	....
1898,	7	458,635	+34,600	....
1899,	7	414,493	—44,142	....
1900,	7	462,722	+48,229	....
1901,	7	489,264	+26,542	+150,267

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
UMBRELLAS AND PARASOLS.				
1896,	4	$407,435	$	$
1897,	4	404,000	—3,435	....
1898,	4	327,000	—77,000	....
1899,	4	353,000	+16,000	....
1900,	4	353,000	....	....
1901,	4	350,819	—2,181	—56,616
DRESS TRIMMINGS, BRAIDS, ETC.				
1896,	8	1,158,296	....	....
1897,	8	1,176,796	+18,500	....
1898,	8	1,229,296	+52,500	....
1899,	8	1,319,688	+90,392	....
1900,	8	1,411,475	+91,787	....
1901,	8	1,529,063	+117,588	+370,767
SHIRTS AND SHIRT WAISTS.				
1896,	9	905,500	....	....
1897,	9	907,500	+2,000	....
1898,	9	933,200	+25,700	....
1899,	9	979,900	+46,700	....
1900,	9	979,700	—200	....
1901,	9	967,900	—11,800	+62,400
NECKWEAR.				
1896,	3	135,000	....	....
1897,	3	135,000	....	....
1898,	3	135,000	....	....

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
NECKWEAR—Continued.				
1899,	3	$135,000	$	$
1900,	3	135,000	....	....
1901,	3	135,850	+850	+850
COTTON AND WOOLEN CLOTHS.				
1896,	24	3,313,847	....	....
1897,	24	3,478,946	+165,099	....
1898,	24	3,477,346	—1,600	....
1899,	24	3,550,167	+72,821	....
1900,	24	4,032,930	+482,763	....
1901,	24	4,198,393	+165,463	+884,546
CARPETS.				
1896,	17	3,150,625	....	....
1897,	17	3,240,181	+89,556	....
1898,	17	3,339,213	+99,032	....
1899,	17	3,653,864	+314,651	....
1900,	17	3,624,415	—29,449	....
1901,	17	3,628,328	+3,913	+477,703
COTTON GOODS.				
1896,	16	2,767,649	....	....
1897,	16	2,825,764	+58,115	....
1898,	16	2,893,271	+67,507	....
1899,	16	3,309,205	+415,934	....
1900,	16	3,313,177	+3,972	....
1901,	16	3,363,442	+50,265	+595,793

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WOOLEN AND WORSTED CASSIMERES.				
1896,	11	$1,297,633	$	$
1897,	11	1,339,549	+41,916	....
1898,	11	1,301,000	—38,549	....
1899,	11	1,382,000	+81,000	....
1900,	11	1,382,000	....	....
1901,	11	1,382,000	....	+84,367
WOOLEN AND WORSTED FABRICS.				
1896,	16	2,696,836	....	....
1897,	16	3,156,227	+186,391	....
1898,	16	3,305,892	+149,665	....
1899,	16	3,489,180	+183,288	....
1900,	16	3,516,532	+27,352	....
1901,	16	3,711,989	+195,457	+742,153
WOOLEN AND WORSTED YARNS.				
1896,	12	2,669,270	....	....
1897,	12	1,719,270	—950,000	....
1898,	12	2,216,000	+496,730	....
1899,	12	2,686,000	+470,000	....
1900,	12	2,738,000	+52,000	....
1901,	12	2,749,500	+11,500	+80,230
RUGS, YARNS, ETC.				
1896,	5	5,360,733	....	....
1897,	5	4,943,779	—416,954	....

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
RUGS, YARNS, ETC.—Continued.				
1898,	$	$5,056,824	+$113,045	$
1899,	5	5,393,446	+336,622	....
1900,	5	5,406,791	+13,345	....
1901,	5	5,161,001	—245,790	—199,732
CARPET YARNS.				
1896,	11	953,500	....	....
1897,	11	967,575	+14,075	....
1898,	11	968,000	+425	....
1899,	11	1,062,532	+94,532	....
1900,	11	1,041,068	—21,464	....
1901,	11	1,074,009	+32,941	+120,509
COTTON YARNS.				
1896,	7	1,240,209	....	....
1897,	7	1,239,175	—1,034	....
1898,	7	1,245,037	+5,862	....
1899,	7	1,296,148	+51,111	....
1900,	7	1,311,543	+15,395	....
1901,	7	1,426,207	+114,664	+185,998
WORSTED, COTTON AND WOOLEN YARNS.				
1896,	10	2,205,274	....	....
1897,	10	2,300,289	+95,015	....
1898,	10	2,314,603	+14,314	....
1899,	10	2,642,458	+327,855	....
1900,	10	2,720,252	+77,794	....
1901,	10	2,839,511	+119,259	+634,237

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WOOLEN BLANKETS, FLANNELS, ETC.				
1896,	5	$669,730	$	$
1897,	5	687,000	+17,270	....
1898,	5	696,500	+9,500	....
1899,	5	794,122	+97,622	....
1900,	5	853,909	+59,787	....
1901,	5	851,526	—2,383	+181,796
LACE GOODS.				
1896,	3	741,000	....	....
1897,	3	741,300	+300	....
1898,	3	795,000	+53,700	....
1899,	3	860,850	+65,850	....
1900,	3	886,044	+25,194	....
1901,	3	913,154	+27,110	+172,154
CHENILLE GOODS.				
1896,	3	470,000	....	....
1897,	3	470,000	....	....
1898,	3	470,000	....	....
1899,	3	465,000	—5,000	....
1900,	3	515,000	+50,000	....
1901,	3	640,000	+125,000	+170,000
UPHOLSTERY GOODS.				
1896,	10	1,857,322	....	....
1897,	10	1,875,721	+18,399	....
1898,	10	1,856,148	—19,573	....

CAPITAL INVESTED—Continued.

COMPARISON OF AGGREGATE CAPITAL INVESTED—SAME ESTABLISHMENTS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
UPHOLSTERY GOODS—Continued.				
1899,	10	$1,985,679	+$129,531	$
1900,	10	2,112,546	+126,867	....
1901,	10	2,141,085	+28,539	+283,763
KNIT GOODS, UNDERWEAR.				
1896,	13	1,750,000	....	....
1897,	13	1,798,000	+48,000	....
1898,	13	1,833,600	+35,600	....
1899,	13	1,987,729	+154,129	....
1900,	13	2,096,610	+108,881	....
1901,	13	2,161,429	+64,819	+411,429
HOSIERY.				
1896,	31	1,997,318	....	....
1897,	31	2,154,951	+157,633	....
1898,	31	2,347,041	+192,090	....
1899,	31	2,894,145	+547,104	....
1900,	31	3,117,842	+223,697	....
1901,	31	3,303,176	+185,334	+1,305,858
SILK—BROAD GOODS, THROWN SILK, YARNS, ETC.				
1896,	6	1,574,700	....	....
1897,	6	1,624,700	+50,000	....
1898,	6	1,977,500	+352,800	....
1899,	6	2,102,500	+125,000	....
1900,	6	2,102,500	....	....
1901,	6	2,097,500	—5,000	+522,800

CAPITAL INVESTED—Continued.

Character of Industry and Years.	Number of establishments considered.	Capital.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SILK—BROAD GOODS AND RIBBONS.				
1896,	2	$1,650,000	$	$
1897,	2	1,650,000	....	....
1898,	2	1,660,000	+10,000	....
1899,	2	1,670,000	+10,000	....
1900,	2	1,700,000	+30,000	....
1901,	2	1,700,000	....	+50,000
SILK—RIBBONS.				
1896,	4	311,882	....	....
1897,	4	394,180	+82,298	....
1898,	4	445,313	+51,133	....
1899,	4	463,316	+18,003	....
1900,	4	504,168	+40,852	....
1901,	4	556,521	+52,353	+244,639

BASIC MATERIAL.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

NOTE.—In this table the aggregate cost of basic material by the same establishments for the years 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1896. Eighty-eight industries, representing 801 establishments, are considered. In basic material is not included fuel or other item than that crude material out of which the product is produced.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
STEEL CASTINGS.				
1896,	7	$418,609	$	$
1897,	7	402,115	—16,494	....
1898,	7	517,448	+115,333	....
1899,	7	822,724	+205,276	....
1900,	7	618,748	—203,976	....
1901,	7	574,406	—44,342	+155,797
STEEL BILLETS, SLABS, BLOOMS, ETC.				
1896,	4	5,724,832	....	....
1897,	4	7,363,930	+1,639,098	....
1898,	4	8,285,732	+921,802	....
1899,	4	14,459,812	+6,174,080	....
1900,	4	13,200,979	—1,258,833	....
1901,	4	14,531,245	+1,330,266	+8,806,413
TOOL STEEL.				
1896,	3	146,601	....	....
1897,	3	74,610	—71,991	....
1898,	3	89,554	+14,944	....

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
TOOL STEEL—Continued.				
1899,	3	$96,154	+$6,600	$
1900,	3	78,514	—17,640	....
1901,	3	126,488	+47,974	—20,113
IRON AND STEEL FORGINGS.				
1896,	7	141,286	....	....
1897,	7	122,710	—18,576	....
1898,	7	157,035	+34,325	....
1899,	7	252,496	+95,461	....
1900,	7	241,555	—10,941	....
1901,	7	281,056	+38,501	+139,770
IRON SPECIALTIES.				
1896,	2	47,113	....	....
1897,	2	77,228	+30,115	....
1898,	2	45,879	—31,349	....
1899,	2	48,083	+2,204	....
1900,	2	51,684	+3,601	....
1901,	2	53,750	+2,066	+6,637
MALLEABLE IRON.				
1896,	4	590,308	....	....
1897,	4	455,890	—134,418	....
1898,	4	698,054	+242,164	....
1899,	4	839,640	+141,586	....
1900,	4	975,533	+135,893	....
1901,	4	873,539	—101,994	+283,231

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BOLTS, NUTS, ETC.				
1896,	8	$600,739	$	$
1897,	8	591,791	—8,948	....
1898,	8	713,906	+122,115	....
1899,	8	1,456,313	+742,407	....
1900,	8	1,428,181	—28,132	....
1901,	8	1,431,237	+3,056	+830,498
WIRE NAILS AND RIVETS.				
1896,	4	521,603	....	....
1897,	4	884,350	+362,747	....
1898,	4	575,701	—308,649	....
1899,	4	738,589	+162,888	....
1900,	4	765,914	+27,325	....
1901,	4	443,771	—322,143	—77,832
TACKS AND SMALL NAILS.				
1896,	4	48,253	....	....
1897,	4	40,862	—7,391	....
1898,	4	35,049	—5,813	....
1899,	4	68,184	+33,135	....
1900,	4	64,075	—4,109	....
1901,	4	70,748	+6,673	+22,495
WIRE.				
1896,	5	118,055	....	....
1897,	5	108,939	—9,116	....
1898,	5	127,555	+18,616	....

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
WIRE—Continued.				
1899,	5	$135,429	+$7,874	$
1900,	5	216,356	+80,927	....
1901,	5	216,782	+426	+98,727
WIRE ROPE.				
1896,	2	292,275	....	....
1897,	2	230,111	—62,164	....
1898,	2	248,135	+18,024	....
1899,	2	361,009	+112,874	....
1900,	2	1,035,106	+674,097	....
1901,	2	1,089,791	+54,685	+797,516
WIRE GOODS.				
1896,	5	45,611	....	....
1897,	5	58,563	+12,952	....
1898,	5	62,195	+3,632	....
1899,	5	88,686	+26,491	....
1900,	5	85,360	—3,326	....
1901,	5	112,779	+27,419	+67,168
WAGON AND CARRIAGE AXLES AND SPRINGS.				
1896,	6	170,988	....	....
1897,	6	167,911	—3,077	....
1898,	6	146,923	—20,988	....
1899,	6	282,368	+135,445	....
1900,	6	238,419	—43,949	....
1901,	6	324,275	+85,856	+153,287

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SCALES, ETC.				
1896,	4	$79,428	$	$
1897,	4	83,826	+4,398	....
1898,	4	88,225	+4,399	....
1899,	4	111,309	+23,084	....
1900,	4	122,333	+11,024	....
1901,	4	126,852	+4,519	+47,424
STOVES, RANGES, HEATERS, ETC.				
1896,	37	843,414	....	....
1897,	37	843,713	+299	....
1898,	37	867,376	+23,663	....
1899,	37	1,080,427	+213,051	....
1900,	37	1,409,891	+329,464	....
1901,	37	1,255,401	—154,490	+411,987
BATH BOILERS, TANKS, ETC.				
1896,	2	33,394	....	....
1897,	2	31,163	—2,231	....
1898,	2	30,676	—487	....
1899,	2	44,809	+14,133	....
1900,	2	44,391	—418	....
1901,	2	49,704	+5,313	+16,310
HARDWARE SPECIALTIES.				
1896,	14	637,416	....	....
1897,	14	668,089	+30,673	....

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
HARDWARE SPECIALTIES—Continued.				
1898,	14	$701,185	+$33,096	$
1899,	14	1,053,817	+352,632	....
1900,	14	849,471	—204,346	....
1901,	14	951,254	+101,783	+313,838
EDGE TOOLS.				
1896,	12	453,478	....	....
1897,	12	223,034	—230,444	....
1898,	12	293,289	+70,255	....
1899,	12	399,445	+106,156	....
1900,	12	486,985	+87,540	....
1901,	12	500,219	+13,334	+46,741
WRENCHES, PICKS, ETC.				
1896,	5	118,234	....	....
1897,	5	152,785	+34,551	....
1898,	5	143,063	—9,722	....
1899,	5	228,910	+85,847	....
1900,	5	256,264	+27,354	....
1901,	5	225,495	—30,769	+107,261
LOCOMOTIVES AND CARS BUILT AND REPAIRED.				
1896,	3	3,738,754	....	....
1897,	3	3,276,309	—462,445	....
1898,	3	4,191,152	+914,843	....
1899,	3	5,634,355	+1,443,203	....
1900,	3	6,459,641	+825,286	....
1901,	3	6,483,061	+23,420	+2,744,307

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
WROUGT IRON PIPE AND TUBES.				
1896,	5	$7,973,945	$	$
1897,	5	7,101,673	—872,272	....
1898,	5	8,285,486	+1,183,813	....
1899,	5	15,485,996	+7,200,510	....
1900,	5	12,906,404	—2,579,592	....
1901,	5	15,141,057	+2,234,653	+7,167,112
CAST IRON PIPE.				
1896,	3	573,580	....	....
1897,	3	767,967	+194,387	....
1898,	3	810,511	+42,544	....
1899,	3	912,507	+101,996	....
1900,	3	1,123,503	+210,996	....
1901,	3	1,254,082	+130,579	+680,502
BRASS, COPPER AND BRONZE GOODS.				
1896,	19	1,142,796	....	....
1897,	19	1,117,888	—24,908	....
1898,	19	1,319,160	+201,272	....
1899,	19	2,137,539	+818,379	....
1900,	19	1,597,301	—540,238	....
1901,	19	2,517,719	+920,418	+1,374,923
IRON AND STEEL BRIDGES.				
1896,	7	2,008,501	....	....
1897,	7	1,731,721	—276,780	....

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON AND STEEL BRIDGES—Continued.				
1898,	7	$2,126,144	+$394,423	$
1899,	7	3,193,878	+1,067,734	....
1900,	7	5,544,996	+2,351,118	....
1901,	7	3,802,840	—1,742,156	+1,794,339
LOCOMOTIVES, STATIONERY ENGINES, ETC.				
1896,	9	4,229,510	....	....
1897,	9	3,933,971	—295,539	....
1898,	9	5,386,109	+1,452,138	....
1899,	9	8,606,253	+3,220,144	....
1900,	9	11,568,788	+2,962,535	....
1901,	9	12,289,340	+720,552	+8,059,830
ENGINES, BOILERS, ETC.				
1896,	10	1,557,093	....	....
1897,	10	1,325,287	—231,806	....
1898,	10	1,514,153	+188,866	....
1899,	10	2,331,697	+817,544	....
1900,	10	2,480,161	+148,464	....
1901,	10	2,489,348	+9,187	+932,255
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES.				
1896,	12	2,270,778	....	....
1897,	12	1,938,862	—331,916	....
1898,	12	2,757,366	+818,504	....

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES — Continued.				
1899,	12	$10,447,921	+$7,690,555	$
1900,	12	18,766,916	+8,318,995	....
1901,	12	18,693,414	—73,502	+16,422,636
IRON VESSELS AND ENGINES.				
1896,	3	1,923,035	....	....
1897,	3	2,020,859	+97,824	....
1898,	3	2,997,076	+976,217	....
1899,	3	5,117,337	+2,120,261	....
1900,	3	6,705,326	+1,587,989	....
1901,	3	5,978,086	—727,240	+4,055,051
BOILERS, TANKS, STACKS, ETC.				
1896,	21	761,415	....	....
1897,	21	863,908	+102,493	....
1898,	21	1,172,463	+308,555	....
1899,	21	1,848,563	+676,100	....
1900,	21	2,148,536	+299,973	....
1901,	21	2,567,205	+418,669	+1,805,790
MACHINERY.				
1896,	21	1,741,304	....	....
1897,	21	1,698,519	—42,785	....
1898,	21	2,030,334	+331,815	....
1899,	21	3,239,736	+1,209,402	....
1900,	21	3,607,094	+367,358	....
1901,	21	3,825,721	+218,627	+2,084,417

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
FOUNDRIES AND MACHINE SHOPS.				
1896,	25	$875,986	$	$
1897,	25	1,049,859	+173,873	....
1898,	25	1,263,302	+213,443	....
1899,	25	1,925,085	+661,783	....
1900,	25	2,036,612	+111,527	....
1901,	25	2,080,142	+73,530	+1,204,156
FILES, ETC.				
1896,	2	95,440	....	....
1897,	2	92,201	—3,239	....
1898,	2	82,739	—9,462	....
1899,	2	105,104	+22,365	....
1900,	2	113,699	+8,595	....
1901,	2	118,953	+5,254	+23,513
SAWS.				
1896,	3	37,000	....	....
1897,	3	26,812	—10,188	....
1898,	3	28,087	+1,275	....
1899,	3	31,600	+3,513	....
1900,	3	48,071	+16,471	....
1901,	3	44,758	—3,313	+7,758
PLUMBER SUPPLIES.				
1896,	3	*	....	....
1897,	3	*	....	....
1898,	3	*	....	....

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*Incomplete returns.

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
PLUMBER SUPPLIES—Continued.				
1899,	3	$552,190	$	$
1900,	3	425,043	—127,147	....
1901,	3	485,511	+60,468	....
ELECTRICAL SUPPLIES.				
1896,	4	1,337,362	....	....
1897,	4	1,365,199	+27,837	....
1898,	4	2,340,407	+975,208	....
1899,	4	3,573,084	+1,232,677	....
1900,	5	5,375,117	+1,802,033	....
1901,	4	5,696,529	+321,412	+4,359,167
SHOVELS, SPADES, SCOOPS, ETC.				
1896,	8	313,871	....	....
1897,	8	276,019	—37,852	....
1898,	8	296,298	+20,279	....
1899,	8	465,999	+169,701	....
1900,	8	406,234	—59,765	....
1901,	8	541,074	+134,840	+227,203
SAFES AND VAULT DOORS.				
1896,	2	66,274	....	....
1897,	2	63,173	—3,101	....
1898,	2	65,984	+2,811	....
1899,	2	65,539	—445	....
1900,	2	121,397	+55,858	....
1901,	2	148,595	+27,198	+82,321

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
METAL AND METALLIC GOODS.				
1896,	3	$47,136	$	$
1897,	3	50,060	+2,924	....
1898,	3	58,176	+8,116	....
1899,	3	82,334	+24,158	....
1900,	3	93,877	+11,543	....
1901,	3	99,610	+5,733	+52,474
BUILDING AND STRUCTURAL IRON WORK.				
1896,	2	522,584	....	....
1897,	2	686,899	+164,315	....
1898,	2	1,241,336	+554,437	....
1899,	2	1,227,578	—13,758	....
1900,	2	3,053,789	+1,826,211	....
1901,	2	3,327,881	+274,092	+2,805,297
IRON CHAINS.				
1896,	5	127,022	....	....
1897,	5	126,244	—778	....
1898,	5	165,742	+39,498	....
1899,	5	252,412	+86,670	....
1900,	5	239,225	—13,187	....
1901,	5	239,113	—112	+112,091
IRON FENCES AND RAILINGS.				
1896,	7	47,937	....	....
1897,	7	58,623	+10,686	....
1898,	7	81,971	+23,348	....

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON FENCES AND RAILINGS —Continued.				
1899,	7	$133,235	+$51,264	$
1900,	7	157,497	+24,262	....
1901,	7	206,195	+48,698	+158,258
AGRICULTURAL IMPLEMENTS.				
1896,	12	1,025,789	....	....
1897,	12	1,027,645	+1,856	....
1898,	12	1,171,437	+143,792	....
1899,	12	1,381,353	+209,916	....
1900,	12	1,483,154	+101,801	....
1901,	12	1,494,064	+10,910	+468,275
STEAM PUMPS.				
1896,	2	146,725	....	....
1897,	2	127,524	—19,201	....
1898,	2	123,813	—3,711	....
1899,	2	176,738	+52,925	....
1900,	2	200,479	+23,741	....
1901,	2	178,558	—21,921	+31,833
BICYCLES.				
1896,	3	364,789	....	....
1897,	3	461,607	+96,818	....
1898,	3	455,452	—6,155	....
1899,	3	308,541	—146,911	....
1900,	3	244,612	—63,929	....
1901,	3	139,241	—105,371	—225,548

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
PIANOS AND ORGANS.				
1896,	2	$32,563	$	$
1897,	2	37,083	+4,520	....
1898,	2	57,843	+20,760	....
1899,	2	59,162	+1,319	....
1900,	2	79,526	+20,364	....
1901,	2	83,646	+4,120	+51,083
TINWARE.				
1896,	5	218,233	....	....
1897,	5	216,243	—1,990	....
1898,	5	217,433	+1,190	....
1899,	5	272,376	+54,943	....
1900,	5	290,940	+18,564	....
1901,	5	337,778	+46,838	+119,545
PAPER MANUFACTORIES.				
1896,	8	1,583,061	....	....
1897,	8	1,451,820	—131,241	....
1898,	8	1,486,541	+34,721	....
1899,	8	1,739,547	+253,006	....
1900,	8	1,748,551	+9,004	....
1901,	8	1,776,599	+28,048	+193,538
WALL PAPER.				
1896,	4	420,913	....	....
1897,	4	499,158	+78,245	....
1898,	4	589,750	+90,592	....

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WALL PAPER—Continued.				
1899,	4	$627,300	+$37,550	$
1900,	4	595,111	—32,189	....
1901,	4	650,626	+55,515	+ 229,713
CIGARS.				
1896,	46	2,703,269	....	....
1897,	46	3,274,003	+570,734	....
1898,	46	3,654,579	+380,576	....
1899,	46	3,797,460	+142,881	....
1900,	46	4,033,899	+236,439	....
1901,	46	3,965,446	—68,453	+1,262,177
BOOK BINDING.				
1896,	3	62,699	....	....
1897,	3	62,018	—681	....
1898,	3	65,522	+3,504	....
1899,	3	77,379	+11,857	....
1900,	3	83,716	+6,337	....
1901,	3	95,214	+11,498	+32,515
CORDAGE, ROPE AND TWINE.				
1896,	5	3,362,991	....	....
1897,	5	3,484,048	+121,057	....
1898,	5	3,524,381	+40,333	....
1899,	5	4,509,784	+985,403	....
1900,	5	5,340,848	+831,064	....
1901,	5	5,676,078	+335,230	+2,313,087

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
PAPER, PAPER BOXES, ENVELOPES, ETC.				
1896,	27	$936,025	$	$
1897,	27	967,556	+31,531	....
1898,	27	1,044,300	+76,744	....
1899,	27	1,129,745	+85,445	....
1900,	27	1,235,711	+105,966	....
1901,	27	1,158,423	—77,288	+222,398
POTTERY.				
1896,	2	68,215	....	....
1897,	2	56,290	—11,925	....
1898,	2	56,589	+299	....
1899,	2	54,604	—1,985	....
1900,	2	64,561	+9,957	....
1901,	2	72,323	+7,762	+4,108
PAVING BRICK.				
1896,	7	32,949	....	....
1897,	7	25,156	—7,793	....
1898,	7	23,113	—2,043	....
1899,	7	33,506	+10,393	....
1900,	7	72,534	+39,028	....
1901,	7	37,076	—35,458	+4,127
BUILDING BRICK.				
1896,	35	174,412	....	....
1897,	35	170,107	—4,305	....
1898,	35	174,974	+4,867	....

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BUILDING BRICK—Continued.				
1899,	35	$181,106	+$6,132	$
1900,	35	165,202	—15,904	....
1901,	35	181,600	+16,398	+7,188
FIRE BRICK.				
1896,	18	423,138	....	....
1897,	18	382,434	—40,704	....
1898,	18	418,484	+36,050	....
1899,	18	552,972	+134,488	....
1900,	18	790,260	+237,288	....
1901,	18	724,698	—65,562	+301,560
SLATE ROOFING, ETC., TONNAGE.				
1896,	6	32,540	....	....
1897,	6	36,721	+4,181	....
1898,	6	32,421	—4,300	....
1899,	6	31,861	—560	....
1900,	6	28,146	—3,715	....
1901,	6	42,098	+13,952	+9,558
SLATE ROOFING, ETC., SQUARES.				
1896,	14	55,722	....	....
1897,	14	66,448	+10,726	....
1898,	14	69,499	+3,051	....
1899,	14	80,325	+10,826	....
1900,	14	69,280	—11,045	....
1901,	14	86,468	+17,188	+30,746

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WINDOW GLASS, BOTTLES AND TABLE GOODS.				
1896,	22	$1,511,890	$	$
1897,	22	1,623,801	+111,911	....
1898,	22	1,587,765	—36,036	....
1899,	22	1,990,388	+402,623	....
1900,	22	2,050,111	+59,723	....
1901,	22	1,790,190	—259,921	+278,300
GLAZED AND CHROME KID.				
1896,	7	5,635,016	....	....
1897,	7	7,036.904	+1,401,888	....
1898,	7	8,092,540	+1,055,636	....
1899,	7	11,007,875	+2,915,335	....
1900,	7	9,330,221	—1,677,654	....
1901,	9	9,553.784	+223,563	+3,918,768
MEN'S, WOMEN'S, MISSES' AND CHILDREN'S SHOES.				
1896,	15	2,853,067	....	....
1897,	15	3,085,003	+231,936	....
1898,	15	3,187,425	+102,422	....
1899,	15	3,293,639	+106,214	....
1900,	15	3,179,012	—114,627	....
1901,	15	3,346,106	+167,094	+493,039
SUSPENDERS.				
1896,	2	200,936	....	....
1897,	2	233,500	+32,564	....

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SUSPENDERS—Continued.				
1898,	2	$245,000	+$11,500	$
1899,	2	315,000	+70,000	....
1900,	2	440,000	+125,000	....
1901,	2	476,000	+36,000	+275,064
HATS AND CAPS.				
1896,	3	284,490	....	....
1897,	3	418,877	+134,387	....
1898,	3	377,205	—41,672	....
1899,	3	433,669	+56,464	....
1900,	3	508,555	+74,886	....
1901,	3	467,440	—41,115	+182,950
FUR AND FELT HATS.				
1896,	4	443,621	....	....
1897,	4	476,658	+33,037	....
1898,	4	494,817	+18,159	....
1899,	4	593,645	+98,828	....
1900,	4	729,924	+136,279	....
1901,	4	873,632	+143,708	+430,011
WOOL HATS.				
1896,	7	270,432	....	....
1897,	7	343,808	+73,376	....
1898,	7	314,029	—29,779	....
1899,	7	333,533	+19,504	....
1900,	7	471,032	+137,499	....
1901,	7	386,829	—84,203	+116,397

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
UMBRELLAS AND PARASOLS.				
1896,	4	$656,219	$	$
1897,	4	708,157	+51,938	....
1898,	4	754,090	+45,933	....
1899,	4	694,246	—59,844	....
1900,	4	769,178	+74,932	....
1901,	4	907,717	+138,539	+251,498
DRESS TRIMMINGS, BRAIDS, ETC.				
1896,	8	536,719	....	....
1897,	8	685,631	+148,912	....
1898,	8	876,508	+190,877	....
1899,	8	912,697	+36,189	....
1900,	8	1,029,684	+116,987	....
1901,	8	958,843	—70,841	+422,124
SHIRTS AND SHIRT WAISTS.				
1896,	9	984,847	....	....
1897,	9	974,269	—10,578	....
1898,	9	1,143,081	+168,812	....
1899,	9	1,342,360	+199,279	....
1900,	9	1,411,543	+69,183	....
1901,	9	1,403,516	—8,027	+418,669
NECKWEAR.				
1896,	3	217,642	....	....
1897,	3	200,833	—16,809	....
1898,	3	214,342	+13,509	....

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
NECKWEAR—Continued.				
1899,	3	$261,882	+$47,540	$
1900,	3	247,396	—14,486	....
1901,	3	222,189	—25,207	+4,547
COTTON AND WOOLEN CLOTHS.				
1896,	24	2,904,386	....	....
1897,	24	3,781,507	+877,121	....
1898,	24	3,745,019	—36,488	....
1899,	24	4,768,367	+1,023,348	....
1900,	24	4,519,160	—249,207	....
1901,	24	4,452,102	—67,058	+1,547,716
CARPETS.				
1896,	17	2,131,394	....	....
1897,	17	2,765,114	+633,720	....
1898,	17	2,850,838	+85,724	....
1899,	17	3,494,859	+644,021	....
1900,	17	3,512,455	+17,596	....
1901,	17	3,882,593	+370,138	+1,751,199
COTTON GOODS.				
1896,	16	1,442,767	....	....
1897,	16	1,498,814	+56,047	....
1898,	16	1,478,396	—20,418	....
1899,	16	1,708,151	+229,755	....
1900,	16	1,813,000	+104,849	....
1901,	16	1,863,117	+50,117	+420,350

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
WOOLEN AND WORSTED CASSIMERES.				
1896,	11	$1,034,784	$	$
1897,	11	1,449,509	+414,725	....
1898,	11	1,581,776	+132,267	....
1899,	11	2,058,438	+476,662	....
1900,	11	890,645	—1,167,793	....
1901,	11	2,014,917	+1,124,272	+980,133
WOOLEN AND WORSTED FABRICS.				
1896,	16	2,037,245	....	....
1897,	16	2,924,303	+887,058	....
1898,	16	3,030,628	+106,325	....
1899,	16	3,542,014	+511,386	....
1900,	16	4,110,454	+568,440	....
1901,	16	3,701,075	—409,379	+1,663,830
WOOLEN AND WORSTED YARNS.				
1896,	12	1,211,445	....	....
1897,	12	2,111,958	+900,513	....
1898,	12	1,994,012	—117,946	....
1899,	12	2,636,300	+642,288	....
1900,	12	2,370,290	—266,010	....
1901,	12	2,999,031	+628,741	+1,787,586
RUGS, YARNS, ETC.				
1896,	5	1,954,855	....	....
1897,	5	1,909,431	—45,424	....

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	pared with the preceding year.	1901 as compared with 1896.
RUGS, YARNS, ETC.—Continued.				
1898,	5	$1,741,967	—$167,464	$
1899,	5	1,937,653	+195,686	....
1900,	5	2,059,524	+121,871	....
1901,	5	2,047,869	—11,655	+93,014
CARPET YARNS.				
1896,	11	839,240	....	....
1897,	11	1,278,068	+438,828	....
1898,	11	946,871	—331,197	....
1899,	11	1,251,831	+304,960	....
1900,	11	1,188,499	—63,332	....
1901,	11	1,249,013	+60,514	+409,773
COTTON YARNS.				
1896,	7	760,547	....	....
1897,	7	754,701	—5,846	....
1898,	7	759,380	+4,679	....
1899,	7	798,654	+39,274	....
1900,	7	987,430	+188,776	....
1901,	7	837,474	—49,956	+76,927
WORSTED, WOOLEN AND COTTON YARNS.				
1896,	10	1,370,289	....	....
1897,	10	1,947,247	+576,958	....
1898,	10	1,724,655	—222,592	....
1899,	10	2,447,491	+722,836	....
1900,	10	2,887,072	+439,581	....
1901,	10	2,715,543	—171,529	+1,345,254

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
WOOLEN BLANKETS, FLANNELS, ETC.				
1896,	5	$620,465	$	$
1897,	5	638,333	+17,868	....
1898,	5	1,133,808	+495,475	....
1899,	5	815,512	—318,296	....
1900,	5	737,822	—77,690	....
1901,	5	887,731	+149,909	+267,266
LACE GOODS.				
1896,	3	190,499	....	....
1897,	3	252,059	+61,560	....
1898,	3	290,322	+38,263	....
1899,	3	350,185	+59,863	....
1900,	3	384,509	+34,324	....
1901,	3	438,178	+53,669	+247,679
CHENILLE GOODS.				
1896,	3	297,395	....	....
1897,	3	329,695	+32,300	....
1898,	3	356,595	+26,900	....
1899,	3	365,058	+8,463	....
1900,	3	401,696	+36,638	....
1901,	3	426,241	+24,545	+128,846
UPHOLSTERY GOODS.				
1896,	10	1,427,820	....	....
1897,	10	1,498,449	+70,629	....
1898,	10	1,626,165	+127,716	....
1899,	10	1,730,220	+104,055	....

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Basic material.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
UPHOLSTERY GOODS—Continued.				
1900,	10	$1,546,240	—$183,980	$
1901,	10	1,537,781	—8,459	+109,961
KNIT GOODS, UNDERWEAR.				
1896,	13	1,759,305	....	....
1897,	13	1,925,739	+166,434	....
1898,	13	2,058,746	+133,007	....
1899,	13	2,215,033	+156,287	....
1900,	13	2,926,399	+711,366	....
1901,	13	2,537,073	—389,326	+777,768
HOSIERY.				
1896,	31	1,626,945	....	....
1897,	31	2,117,807	+490,862	....
1898,	31	2,312,556	+194,749	....
1899,	31	2,306,461	—6,095	....
1900,	31	2,634,225	+327,764	....
1901,	31	2,737,834	+103,609	+1,110,889
SILK—BROAD GOODS, THROWN SILK, YARNS, ETC.				
1896,	6	2,331,078	....	....
1897,	6	3,310,003	+978,925	....
1898,	6	3,764,644	+454,641	....
1899.	6	4,699,556	+934,912	....
1900,	6	4,598,479	—101,077	....
1901,	6	3,646,366	—952,113	+1,315,288

BASIC MATERIAL—Continued.

COMPARISON OF AGGREGATE COST OF BASIC MATERIAL—SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of estazlishments considered.	Basic material.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
SILK—BROAD GOODS AND RIBBONS.				
1896,	2	$700,000	$	$
1897,	2	1,000,000	+300,000	....
1898,	2	1,200,000	+200,000	....
1899,	2	1,315,000	+115,000	....
1900,	2	1,128,292	—186,708	....
1901,	2	1,202,479	+74,187	+502,479
SILK—RIBBONS.				
1896,	4	309,883	....	....
1897,	4	459,658	+149,775	....
1898,	4	514,851	—55,193	....
1899,	4	517,973	+3,122	....
1900,	4	478,708	—39,265	....
1901,	4	676,037	+197,329	+366,154

DAYS IN OPERATION.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

NOTE.—In this table the average number of days of employment by the same establishments for the years 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1896. Eighty-eight industries, representing 801 establishments, are considered.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
STEEL CASTINGS.				
1896,	7	290	......	......
1897,	7	310	+20	......
1898,	7	310	......	......
1899,	7	302	—8	......
1900,	7	307	+5	......
1901,	7	302	—5	+12
STEEL BILLETS, SLABS, BLOOMS, ETC.				
1896,	4	204	......	......
1897,	4	291	+87	......
1898,	4	286	—5	......
1899,	4	295	+9	......
1900,	4	246	—49	......
1901,	4	290	+44	+86
TOOL STEEL.				
1896,	3	267	......	......
1897,	3	242	—25	......
1898,	3	311	+69	......
1899,	3	291	—20	......

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
TOOL STEEL—Continued.				
1900,	3	292	+1	......
1901,	3	295	+3	+28
IRON AND STEEL FORGINGS.				
1896,	7	256	......	......
1897,	7	281	+25	......
1898,	7	293	+12	......
1899,	7	300	+7	......
1900,	7	292	—8	......
1901,	7	278	—14	+22
IRON SPECIALTIES.				
1896,	2	301	......	......
1897,	2	301	......	......
1898,	2	301	......	......
1899,	2	301	......	......
1900,	2	301	......	......
1901,	2	301	......	......
MALLEABLE IRON.				
1896,	4	292	......	......
1897,	4	292	......	......
1898,	4	298	+6	......
1899,	4	298	......	......
1900,	4	291	—7	......
1901,	4	286	—5	—6

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
BOLTS, NUTS, ETC.				
1896,	8	235	......	......
1897,	8	262	+27	......
1898,	8	274	+12	......
1899,	8	284	+10	......
1900,	8	291	+7	......
1901,	8	306	+15	+71
WIRE NAILS AND RIVETS.				
1896,	4	241	......	......
1897,	4	250	+9	......
1898,	4	189	—61	......
1899,	4	142	—47	......
1900,	4	116	—26	......
1901,	4	301	+185	+60
TACKS AND SMALL NAILS.				
1896,	4	226	......	......
1897,	4	209	—17	......
1898,	4	248	+39	......
1899,	4	280	+32	......
1900,	4	253	—27	......
1901,	4	280	+27	+54
WIRE.				
1896,	5	285	......	......
1897,	5	265	—20	......
1898,	5	319	+54	......

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WIRE—Continued.				
1899,	5	323	+4	......
1900,	5	301	—22	......
1901,	5	302	+1	+17
WIRE ROPE.				
1896,	2	302	......	......
1897,	2	303	+1	......
1898,	2	303	......	......
1899,	2	304	+1	......
1900,	2	306	+2	......
1901,	2	308	+2	+6
WIRE GOODS.				
1896,	5	296	......	......
1897,	5	300	+4	......
1898,	5	301	+1	......
1899,	5	301	......	......
1900,	5	301	......	......
1901,	5	294	—7	—2
WAGON AND CARRIAGE AXLES AND SPRINGS.				
1896,	6	254	......	......
1897,	6	276	+22	......
1898,	6	289	+13	......
1899,	6	285	—4	......
1900,	6	278	—7	......
1901,	6	277	—1	+23

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SCALES, ETC.				
1896,	4	276	......	......
1897,	4	285	+9	......
1898,	4	298	+13	......
1899,	4	302	+4	......
1900,	4	298	—4	......
1901,	4	293	—5	+17
STOVES, RANGES, HEATERS, ETC.				
1896,	37	209	......	......
1897,	37	228	+19	......
1898,	37	237	+9	......
1899,	37	254	+17	......
1900,	37	245	—9	......
1901,	37	249	+4	+40
BATH BOILERS, TANKS, ETC.				
1896,	2	309	......	......
1897,	2	305	—4	......
1898,	2	302	—3	......
1899,	2	304	+2	......
1900,	2	308	+4	......
1901,	2	304	—4	—5
HARDWARE SPECIALTIES.				
1896,	14	260	......	......
1897,	14	270	+10	......

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
HARDWARE SPECIALTIES—Continued.				
1898,	14	256	—14	......
1899,	14	280	+24	......
1900,	14	249	—31	......
1901,	14	296	+47	+36
EDGE TOOLS.				
1896,	12	246	......	......
1897,	12	227	—19	......
1898,	12	291	+64	......
1899,	12	294	+3	......
1900,	12	297	+3	......
1901,	12	297	......	+51
WRENCHES, PICKS, ETC.				
1896,	5	240	......	......
1897,	5	266	+26	......
1898,	5	283	+17	......
1899,	5	293	+10	......
1900,	5	280	—13	......
1901,	5	281	+1	+41
LOCOMOTIVES AND CARS BUILT AND REPAIRED.				
1896,	3	273	......	......
1897,	3	282	+9	......
1898,	3	296	+14	......
1899,	3	304	+8	......

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
LOCOMOTIVES AND CARS BUILT AND REPAIRED—Continued.				
1900,	3	303	—1	......
1901,	3	304	+1	+31
WROUGHT IRON PIPE AND TUBES.				
1896,	5	283	......	......
1897,	5	298	+15	......
1898,	5	303	+5	......
1899,	5	269	—34	......
1900,	5	266	—3	......
1901,	5	284	+18	+1
CAST IRON PIPE.				
1896,	3	303	......	......
1897,	3	302	—1	......
1898,	3	296	—6	......
1899,	3	252	—44	......
1900,	3	306	+54	......
1901,	3	315	+9	+12
BRASS, COPPER AND BRONZE GOODS.				
1896,	19	295	......	......
1897,	19	294	—1	......
1898,	19	297	+3	......
1899,	19	303	+6	......
1900,	19	299	—4	......
1901,	19	305	+6	+10

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON AND STEEL BRIDGES.				
1896,	7	294	......	......
1897,	7	298	+4	......
1898,	7	302	+4	......
1899,	7	280	—22	......
1900,	7	301	+21	......
1901,	7	309	+8	+15
LOCOMOTIVES, STATIONERY ENGINES, ETC.				
1896,	9	306	......	......
1897,	9	306	......	......
1898,	9	305	—1	......
1899,	9	307	+2	......
1900,	9	307	......	......
1901,	9	303	—4	—3
ENGINES, BOILERS, ETC.				
1896,	10	295	......	......
1897,	10	294	—1	......
1898,	10	304	+10	......
1899,	10	301	—3	......
1900,	10	306	+5	......
1901,	10	303	—3	+8
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES.				
1896,	12	260	......	......
1897,	12	280	+20	......

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CAR SPRINGS, AXLES AND RAILWAY SUPPLIES — Continued.				
1898,	12	295	+15	......
1899,	12	309	+14	......
1900,	12	311	+2	......
1901,	12	308	—3	+48
IRON VESSELS AND ENGINES.				
1896,	3	306	......	......
1897,	3	305	—1	......
1898,	3	304	—1	......
1899,	3	296	—8	......
1900,	3	292	—4	......
1901,	3	330	+38	+24
BOILERS, TANKS, STACKS, ETC.				
1896,	21	286	......	......
1897,	21	285	—1	......
1898,	21	291	+6	......
1899,	21	304	+13	......
1900,	21	305	+1	......
1901,	21	298	—7	+12
MACHINERY.				
1896,	21	301	......	......
1897,	21	309	+8	......
1898,	21	300	—9	......
1899,	21	302	+2	......

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
1900,	21	302	......	......
1901,	21	307	+5	+6
FOUNDRIES AND MACHINE SHOPS.				
1896,	25	286	......	......
1897,	25	295	+9	......
1898,	25	296	+1	......
1899,	25	304	+8	......
1900,	25	300	—4	......
1901,	25	303	+3	+17
FILES, ETC.				
1896,	2	275	......	......
1897,	2	266	—9	......
1898,	2	278	+12	......
1899,	2	302	+24	......
1900,	2	295	—7	......
1901,	2	288	—7	+13
SAWS.				
1896,	3	229	......	......
1897,	3	210	—19	......
1898,	3	244	+34	......
1899,	3	250	+6	......
1900,	3	281	+31	......
1901,	3	288	+7	+59

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
PLUMBER SUPPLIES.				
1896,	3	281	......	......
1897,	3	269	—12	......
1898,	3	290	+21	......
1899,	3	312	+22	......
1900,	3	312	......	......
1901,	3	332	+20	+51
ELECTRICAL SUPPLIES.				
1896,	4	289	......	......
1897,	4	297	+8	......
1898,	4	301	+4	......
1899,	4	302	+1	......
1900,	4	296	—6	......
1901,	4	300	+4	+11
SHOVELS, SPADES, SCOOPS, ETC.				
1896,	8	210	......	......
1897,	8	219	+9	......
1898,	8	246	+27	......
1899,	8	281	+35	......
1900,	8	253	—28	......
1901,	8	283	+30	+73
SAFES AND VAULT DOORS.				
1896,	2	307	......	......
1897,	2	301	—6	......

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
SAFES AND VAULT DOORS—Continued.				
1898,	2	298	—3	......
1899,	2	294	—4	......
1900,	2	290	—4	......
1901,	2	303	+13	—4
METAL AND METALLIC GOODS.				
1896,	3	234	......	......
1897,	3	258	+24	......
1898,	3	255	—3	......
1899,	3	265	+10	......
1900,	3	275	+10	......
1901,	3	294	+19	+60
BUILDING AND STRUCTURAL IRON WORK.				
1896,	2	301	......	......
1897,	2	302	+1	......
1898,	2	307	+5	......
1890,	2	305	—2	......
1900,	2	306	+1	......
1901,	2	306	......	+5
IRON CHAINS.				
1896,	5	264	......	......
1897,	5	272	+8	......
1898,	5	298	+26	......
1899,	5	296	—2	......

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON CHAINS—Continued.				
1900,	5	252	—44	......
1901,	5	290	+38	+26
IRON FENCES AND RAILINGS.				
1896,	7	293	......	......
1897,	7	298	+5	......
1898,	7	305	+7	......
1899,	7	303	—2	......
1900,	7	305	+2	......
1901,	7	306	+1	+13
AGRICULTURAL IMPLEMENTS.				
1896,	12	287	......	......
1897,	12	293	+6	......
1898,	12	300	+7	......
1899,	12	298	—2	......
1900,	12	299	+1	......
1901,	12	302	+3	+15
STEAM PUMPS.				
1896,	2	307	......	......
1897,	2	307	......	......
1898,	2	304	—3	......
1899,	2	301	—3	......
1900,	2	301	......	......
1901,	2	302	+1	—5

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BICYCLES.				
1896,	3	268	......	......
1897,	3	280	+12	......
1898,	3	277	—3	......
1899,	3	275	—2	......
1900,	3	236	—39	......
1901,	3	274	+38	+8
PIANOS AND ORGANS.				
1896,	2	271	......	......
1897,	2	292	+21	......
1898,	2	294	+2	......
1899,	2	293	—1	......
1900,	2	292	—1	......
1901,	2	296	+4	+25
TINWARE.				
1896,	5	301	......	......
1897,	5	301	......	......
1898,	5	300	—1	......
1899,	5	301	+1	......
1900,	5	300	—1	......
1901,	5	272	—28	—29
PAPER MANUFACTORIES.				
1896,	8	262	......	......
1897,	8	277	+15	......
1898,	8	283	+6	......

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
PAPER MANUFACTORIES.—Continued.				
1899,	8	284	+1	......
1900,	8	297	+13	......
1901,	8	293	—4	+31
WALL PAPER.				
1896,	4	258	......	......
1897,	4	283	+25	......
1898,	4	284	+1	......
1899,	4	282	—2	......
1900,	4	280	—2	......
1901,	4	285	+5	+27
CIGARS.				
1896,	46	287	......	......
1897,	46	291	+4	......
1898,	46	293	+2	......
1899,	46	295	+2	......
1900,	46	296	+1	......
1901,	46	294	—2	+7
BOOK BINDING.				
1896,	3	301	......	......
1897,	3	280	—21	......
1898,	3	283	+3	......
1899,	3	280	—3	......
1900,	3	288	+8	......
1901,	3	290	+2	—11

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CORDAGE ROPE AND TWINE.				
1896,	5	288	......	......
1897,	5	317	+29	......
1898,	5	312	—5	......
1899,	5	312	......	......
1900,	5	300	—12	......
1901,	5	300	......	+12
PAPER, PAPER BOXES, ENVELOPES, ETC.				
1896,	27	297	......	......
1897,	27	301	+4	......
1898,	27	302	+1	......
1899,	27	303	+1	......
1900,	27	300	—3	......
1901,	27	301	+1	+4
POTTERY.				
1896,	2	302	......	......
1897,	2	287	—15	......
1898,	2	291	+4	......
1899,	2	298	+7	......
1900,	2	288	—10	......
1901,	2	304	+16	+2
PAVING BRICK.				
1896,	7	255	......	......
1897,	7	247	—8	......

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
PAVING BRICK—Continued.				
1898,	7	246	—1	......
1899,	7	230	—16	......
1900,	7	270	+40	......
1901,	7	234	—36	—21
BUILDING BRICK.				
1896,	35	229	......	......
1897,	35	227	—2	......
1898,	35	218	—9	......
1899,	35	220	+2	......
1900,	35	217	—3	......
1901,	35	230	+13	+1
FIRE BRICK.				
1896,	18	283	......	......
1897,	18	281	—2	......
1898,	18	243	—38	......
1899,	18	249	+6	......
1900,	18	300	+51	......
1901,	18	298	—2	+15
SLATE ROOFING, ETC., TONNAGE.				
1896,	6	229	......	......
1897,	6	226	—3	......
1898,	6	245	+19	......
1899,	6	236	—9	......
1900,	6	255	+19	......
1901,	6	268	+13	+39

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SLATE ROOFING, ETC., SQUARES.				
1896,	14	238	......	......
1897,	14	239	+1	......
1898,	14	177	—62	......
1899,	14	245	+68	......
1900,	14	244	—1	......
1901,	14	254	+10	+16
WINDOW GLASS, BOTTLES AND TABLE GOODS.				
1896,	22	240	......	......
1897,	22	263	+23	......
1898,	22	276	+13	......
1899,	22	283	+7	......
1900,	22	265	—18	......
1901,	22	256	—9	+16
GLAZED AND CHROME KID.				
1896,	7	299	......	......
1897,	7	301	+2	......
1898,	7	298	—3	......
1899,	7	300	+2	......
1900,	7	270	—30	......
1901,	7	298	+28	—1
MEN'S. WOMEN'S, MISSES' AND CHILDREN'S SHOES.				
1896,	15	281	......	......
1897,	15	292	+11	......

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
MENS', WOMEN'S, MISSES AND CHILDREN'S SHOES — Continued.				
1898,	15	288	—4	......
1899,	15	298	+10	......
1900,	15	295	—3	......
1901,	15	299	+4	+18
SUSPENDERS.				
1896,	2	295	......	......
1897,	2	403	+108	......
1898,	2	297	—106	......
1899,	2	299	+2	......
1900,	2	298	—1	......
1901,	2	298	......	+3
HATS AND CAPS.				
1896,	3	284	......	......
1897,	3	289	+5	......
1898,	3	286	—3	......
1899,	3	283	—3	......
1900,	3	282	—1	......
1901,	3	287	+5	+3
FUR AND FELT HATS.				
1896,	4	307	......	......
1897,	4	308	+1	......
1898,	4	307	—1	......
1899,	4	309	+2	......
1900,	4	309	......	......
1901,	4	308	—1	+1

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
WOOL HATS.				
1896,	7	274	......	......
1897,	7	260	—14	....
1898,	7	279	+19	....
1899,	7	266	—13	....
1900,	7	294	+28	......
1901,	7	282	—12	+8
UMBRELLAS AND PARASOLS.				
1896,	4	307	......	......
1897,	4	307	......	......
1898,	4	308	+1	......
1899,	4	308	......	......
1900,	4	306	—2	......
1901,	4	306	......	—1
DRESS TRIMMINGS, BRAIDS, ETC.				
1896,	8	287	......	......
1897,	8	295	+8	......
1898,	8	298	+3	......
1899,	8	301	+3	......
1900,	8	302	+1	......
1901,	8	292	—10	+5
SHIRTS AND SHIRT WAISTS.				
1896,	9	286	......	......
1897,	9	298	+12	......

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SHIRTS AND SHIRT WAISTS—Continued.				
1898,	9	298	......	......
1899,	9	298	......	......
1900,	9	299	+1	......
1901,	9	299	......	+13
NECKWEAR.				
1896,	3	308	......	......
1897,	3	306	—2	......
1898,	3	308	+2	......
1899,	3	308	......	......
1900,	3	308	......	......
1901,	3	308	......	......
COTTON AND WOOLEN CLOTHS.				
1896,	24	269	......	......
1897,	24	286	+17	......
1898,	24	266	—20	......
1899,	24	273	+7	......
1900,	24	278	+5	......
1901,	24	280	+2	+11
CARPETS.				
1896,	17	264	......	......
1897,	17	292	+28	......
1898,	17	292	......	......
1899,	17	302	+10	......
1900,	17	297	—5	......
1901,	17	298	+1	+34

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
COTTON GOODS.				
1896,	16	262	......	......
1897,	16	279	+17	......
1898,	16	290	+11	......
1899,	16	296	+6	......
1900,	16	290	—6	......
1901,	16	287	—3	+25
WOOLEN AND WORSTED CASSIMERES.				
1896,	11	270	......	......
1897,	11	277	+7	......
1898,	11	262	—15	......
1899,	11	281	+19	......
1900,	11	289	+8	......
1901,	11	278	—11	+8
WOOLEN AND WORSTED FABRICS.				
1896,	16	247	......	......
1897,	16	289	+42	......
1898,	16	288	—1	......
1899,	16	296	+8	......
1900,	16	293	—3	......
1901,	16	291	—2	+44
WOOLEN AND WORSTED YARNS.				
1896,	12	248	......	......
1897,	12	290	+42	......

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WOOLEN AND WORSTED YARNS—Continued.				
1898,	12	289	—1	......
1899,	12	291	+2	......
1900,	12	279	—12	......
1901,	12	292	+13	+44
RUGS, YARNS, ETC.				
1896,	5	256	......	......
1897,	5	270	+14	......
1898,	5	277	+7	......
1899,	5	285	+8	......
1900,	5	292	+7	......
1901,	5	279	—13	+23
CARPET YARNS.				
1896,	11	265	......	......
1897,	11	298	+33	......
1898,	11	266	—32	......
1899,	11	299	+33	......
1900,	11	277	—22	......
1901,	11	291	+14	+26
COTTON YARNS.				
1896,	7	265	......	......
1897,	7	275	+10	......
1898,	7	294	+19	......
1899,	7	290	—4	......
1900,	7	295	+5	......
1901,	7	285	—10	+20

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WORSTED WOOLEN AND COTTON YARNS.				
1896,	10	245	......	......
1897,	10	289	+44	......
1898,	10	246	—43	......
1899,	10	277	+31	......
1900,	10	294	+17	......
1901,	10	273	—21	+28
WOOLEN BLANKETS, FLANNELS, ETC.				
1896,	5	304	......	......
1897,	5	301	—3	......
1898,	5	351	+50	......
1899,	5	279	—72	......
1900,	5	303	+24	......
1901,	5	291	—12	—13
LACE GOODS.				
1896,	3	274	......	......
1897,	3	296	+22	......
1898,	3	307	+11	......
1899,	3	305	—2	......
1900,	3	303	—2	......
1901,	3	302	—1	+28
CHENILLE GOODS.				
1896,	3	279	......	......
1897,	3	300	+21	......

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1999, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
CHENILLE GOODS—Continued.				
1898,	3	300	......	......
1899,	3	300	......	......
1900,	3	301	+1	......
1901,	3	304	+3	+25
UPHOLSTERY GOODS.				
1896,	10	294	......	......
1897,	10	299	+5	......
1898,	10	301	+2	......
1899,	10	290	—11	......
1900,	10	269	—21	......
1901,	10	287	+18	—7
KNIT GOODS, UNDERWEAR.				
1896,	13	271	......	......
1897,	13	289	+18	......
1898,	13	280	—9	......
1899,	13	279	—1	......
1900,	13	291	+12	......
1901,	13	282	—9	+11
HOSIERY.				
1896,	31	256	......	......
1897,	31	290	+34	......
1898,	31	286	—4	......
1899,	31	281	—5	......
1900,	31	287	+6	......
1901,	31	290	+3	+34

DAYS IN OPERATION—Continued.

COMPARISON OF AVERAGE NUMBER OF DAYS IN OPERATION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1999, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average number of days in operation.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SILK—BROAD GOODS, THROWN SILK, YARNS, ETC.				
1896,	6	275	......	......
1897,	6	301	+26	......
1898,	6	293	—8	......
1899,	6	278	—15	......
1900,	6	282	+4	......
1901,	6	262	—20	—13
SILK—BROAD GOODS AND RIBBONS.				
1896,	2	301	......	......
1897,	2	301	......	......
1898,	2	302	+1	......
1899,	2	301	—1	......
1900,	2	299	—2	......
1901,	2	301	+2	......
SILK—RIBBONS.				
1896,	4	298	......	......
1897,	4	299	+1	......
1898,	4	299	......	......
1899,	4	293	—6	......
1900,	4	283	—10	......
1901,	4	302	+19	+4

PERSONS EMPLOYED.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

NOTE.—In this table the average number of persons employed by the same establishments for the years 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1896. Eighty-eight industries, representing 801 establishments, are considered.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
STEEL CASTINGS.				
1896,	7	1,016	......	......
1897,	7	1,068	+52	......
1898,	7	1,363	+295	......
1899,	7	1,705	+342	......
1900,	7	1,741	+36	......
1901,	7	1,478	—263	+462
STEEL BILLETS, SLABS, BLOOMS, ETC.				
1896,	4	1,392	......	......
1897,	4	1,278	—114	......
1898,	4	1,475	+197	......
1899,	4	1,802	+327	......
1900,	4	1,682	—120	......
1901,	4	1,838	+156	+446
TOOL STEEL.				
1896,	3	160	......	......
1897,	3	159	—1	......
1898,	3	214	+55	......
1899,	3	209	—5	......
1900,	3	132	—77	......
1901,	3	167	+35	+7

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON AND STEEL FORGINGS.				
1896,	7	254	......	......
1897,	7	244	—10	......
1898,	7	318	+74	......
1899,	7	395	+77	......
1900,	7	384	—11	......
1901,	7	482	+98	+228
IRON SPECIALTIES.				
1896,	2	37	......	......
1897,	2	45	+8	......
1898,	2	35	—10	......
1899,	2	31	—4	......
1900,	2	42	+11	......
1901,	2	53	+11	+16
MALLEABLE IRON.				
1896,	4	1,575	......	......
1897,	4	1,404	—171	......
1898,	4	1,640	+236	......
1899,	4	1,831	+191	......
1900,	4	1,671	—160	......
1901,	4	1,905	+234	+330
BOLTS, NUTS, ETC.				
1896,	8	942	......	......
1897,	8	966	+24	......
1898,	8	1,010	+44	......
1899,	8	1,268	+258	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BOLTS, NUTS, ETC.—Continued.				
1900,	8	1,324	+56	......
1901,	8	1,573	+249	+631
WIRE NAILS AND RIVETS.				
1896,	4	499	......	......
1897,	4	644	+145	......
1898,	4	644	......	......
1899,	4	725	+81	......
1900,	4	812	+87	......
1901,	4	255	—557	—244
TACKS AND SMALL NAILS.				
1896,	4	118	......	......
1897,	4	114	—4	......
1898,	4	68	—46	......
1899,	4	158	+90	......
1900,	4	141	—17	......
1901,	4	142	+1	+24
WIRE.				
1896,	5	97	......	......
1897,	5	105	+8	......
1898,	5	122	+17	......
1899,	5	157	+35	......
1900,	5	254	+97	......
1901,	5	258	+4	+161

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WIRE ROPE.				
1896,	2	158	......	......
1897,	2	166	+8	......
1898,	2	190	+24	......
1899,	2	232	+42	......
1900,	2	342	+110	......
1901,	2	393	+51	+235
WIRE GOODS.				
1896,	5	194	......	......
1897,	5	215	+21	......
1898,	5	228	+13	......
1899,	5	257	+29	......
1900,	5	208	—49	......
1901,	5	242	+34	+48
WAGON AND CARRIAGE AXLES AND SPRINGS.				
1896,	6	353	......	......
1897,	6	353	......	......
1898,	6	403	+50	......
1899,	6	494	+91	......
1900,	6	473	—21	......
1901,	6	618	+145	+265
SCALES, ETC.				
1896,	4	113	......	......
1897,	4	122	+9	......
1898,	4	134	+12	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SCALES, ETC.—Continued.				
1899,	4	159	+25	......
1900,	4	177	+18	......
1901,	4	183	+6	+70
STOVES, RANGES, HEATERS, ETC.				
1896,	37	3,447	......	......
1897,	37	3,543	+96	......
1898,	37	3,627	+84	......
1899,	37	3,682	+55	......
1900,	37	3,758	+76	......
1901,	37	3,773	+15	+326
BATH BOILERS, TANKS, ETC.				
1896,	2	26	......	......
1897,	2	28	+2	......
1898,	2	32	+4	......
1899,	2	45	+13	......
1900,	2	38	—7	......
1901,	2	44	+6	+18
HARDWARE SPECIALTIES.				
1896,	14	2,509	......	......
1897,	14	2,643	+134	......
1898,	14	2,871	+228	......
1899,	14	3,307	+436	......
1900,	14	3,154	—153	......
1901,	14	3,133	—21	+624

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
EDGE TOOLS.				
1896,	12	818	......	......
1897,	12	827	+9	......
1898,	12	878	+51	......
1899,	12	1,018	+140	......
1900,	12	1,077	+59	......
1901,	12	1,097	+20	+279
WRENCHES, PICKS, ETC.				
1896,	5	248	......	......
1897,	5	293	+45	......
1898,	5	272	—21	......
1899,	5	341	+61	......
1900,	5	386	+45	......
1901,	5	357	—29	+109
LOCOMOTIVES AND CARS BUILT AND REPAIRED.				
1896,	3	6,254	......	......
1897,	3	5,742	—512	......
1898,	3	5,965	+223	......
1899,	3	6,655	+690	......
1900,	3	7,185	+530	......
1901,	3	7,498	+313	+1,244
WROUGHT IRON PIPE AND TUBES.				
1896,	5	5,324	......	......
1897,	5	5,110	—214	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WROUGHT IRON PIPE AND TUBES—Continued.				
1898,	5	5,693	+583	......
1899,	5	8,754	+3,061	......
1900,	5	5,420	—3,334	......
1901,	5	6,574	+1,154	+1,250
CAST IRON PIPE.				
1896,	3	507	......	......
1897,	3	615	+108	......
1898,	3	689	+74	......
1899,	3	740	+51	......
1900,	3	797	+57	......
1901,	3	841	+44	+334
BRASS, COPPER AND BRONZE GOODS.				
1896,	19	1,210	......	......
1897,	19	1,185	—25	......
1898,	19	1,327	+142	......
1899,	19	1,507	+180	......
1900,	19	1,582	+75	......
1901,	19	1,760	+178	+550
IRON AND STEEL BRIDGES.				
1896,	7	1,169	......	......
1897,	7	1,177	+8	......
1898,	7	1,423	+246	......
1899,	7	1,680	+257	......
1900,	7	2,233	+553	......
1901,	7	2,076	—157	+907

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
LOCOMOTIVES, STATIONERY ENGINES, ETC.				
1896,	9	5,587	......	......
1897,	9	5,651	+64	......
1898,	9	7,967	+2,316	......
1899,	9	9,827	+1,860	......
1900,	9	12,003	+2,176	......
1901,	9	13,298	+1,295	+7,711
ENGINES, BOILERS, ETC.				
1896,	10	1,922	......	......
1897,	10	1,690	—232	......
1898,	10	1,904	+214	......
1899,	10	2,163	+259	......
1900,	10	2,373	+210	......
1901,	10	2,533	+160	+611
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES.				
1896,	12	2,240	......	......
1897,	12	2,306	+66	......
1898,	12	3,130	+824	......
1899,	12	6,343	+3,213	......
1900,	12	9,125	+2,782	......
1901,	12	9,737	+612	+7,497
IRON VESSELS AND ENGINES.				
1896,	3	4,044	......	......
1897,	3	3,447	—597	......
1898,	3	5,384	+1,937	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON VESSELS AND ENGINES—Continued.				
1899,	3	6,188	+804	......
1900,	3	6,677	+489	......
1901,	3	6,268	—409	+2,224
BOILERS, TANKS, STACKS, ETC.				
1896,	21	1,161	......	......
1897,	21	1,128	—33	......
1898,	21	1,386	+258	......
1899,	21	1,627	+241	......
1900,	21	1,933	+306	......
1901,	21	2,135	+202	+974
MACHINERY.				
1896,	21	3,721	......	......
1897,	21	3,853	+132	......
1898,	21	4,434	+581	......
1899,	21	5,630	+1,196	......
1900,	21	6,100	+470	......
1901,	21	6,342	+242	+2,621
FOUNDRIES AND MACHINE SHOPS.				
1896,	25	2,127	......	......
1897,	25	2,101	—26	......
1898,	25	2,447	+346	......
1899,	25	3,104	+657	......
1900,	25	3,204	+100	......
1901,	25	3,622	+418	+1,495

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
FILES, ETC.				
1896,	2	331	......	......
1897,	2	346	+15	......
1898,	2	369	+23	......
1899,	2	394	+25	......
1900,	2	422	+28	......
1901,	2	415	—7	+84
SAWS.				
1896,	3	56	......	......
1897,	3	50	—6	......
1898,	3	47	—3	......
1899,	3	47	......	......
1900,	3	56	+9	......
1901,	3	57	+1	+1
PLUMBER SUPPLIES.				
1896,	3	960	......	......
1897,	3	921	—39	......
1898,	3	965	+44	......
1899,	3	1,046	+81	......
1900,	3	1,048	+2	......
1901,	3	1,086	+38	+126
ELECTRICAL SUPPLIES.				
1896,	4	2,528	......	......
1897,	4	2,173	—355	......
1898,	4	3,499	+1,326	......
1899,	4	5,184	+1,685	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
ELECTRICAL SUPPLIES—Continued.				
1900,	4	6,210	+1,026	......
1901,	4	7,212	+1,002	+4,684
SHOVELS, SPADES, SCOOPS, ETC.				
1896,	8	545	......	......
1897,	8	511	—34	......
1898,	8	528	+17	......
1899,	8	563	+35	......
1900,	8	532	—31	......
1901,	8	592	+60	+47
SAFES AND VAULT DOORS.				
1896,	2	128	......	......
1897,	2	125	—3	......
1898,	2	121	—4	......
1899,	2	120	—1	......
1900,	2	180	+60	......
1901,	2	224	+44	+96
METAL AND METALLIC GOODS.				
1896,	3	194	......	......
1897,	3	207	+13	......
1898,	3	225	+18	......
1899,	3	269	+44	......
1900,	3	297	+28	......
1901,	3	252	—45	+58

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BUILDING AND STRUCTURAL IRON WORK.				
1896,	2	752	......	......
1897,	2	662	—90	......
1898,	2	841	+179	......
1899,	2	1,240	+399	......
1900,	2	1,678	+438	......
1901,	2	2,286	+608	+1,534
IRON CHAINS.				
1896,	5	231	......	......
1897,	5	231	......	......
1898,	5	269	+38	......
1899,	5	299	+30	......
1900,	5	264	—35	......
1901,	5	288	+24	+57
IRON FENCES AND RAILINGS.				
1896,	7	79	......	......
1897,	7	100	+21	......
1898,	7	126	+26	......
1899,	7	155	+29	......
1900,	7	197	+42	......
1901,	7	220	+23	+141
AGRICULTURAL IMPLEMENTS.				
1896,	12	1,295	......	......
1897,	12	1,322	+27	......
1898,	12	1,499	+177	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
AGRICULTURAL IMPLEMENTS Continued.				
1899,	12	1,595	+96	......
1900,	12	1,587	—8	......
1901,	12	1,594	+7	+299
STEAM PUMPS.				
1896,	2	153	......	......
1897,	2	140	—13	......
1898,	2	151	+11	......
1899,	2	225	+74	......
1900,	2	268	+43	......
1901,	2	231	—37	+78
BICYCLES.				
1896,	3	222	......	......
1897,	3	255	+33	......
1898,	3	352	+97	......
1899.	3	297	—55	......
1900,	3	256	—41	......
1901,	3	97	—159	—125
PIANOS AND ORGANS.				
1896,	2	80	......	......
1897,	2	77	—3	......
1898,	2	95	+18	......
1899,	2	105	+10	......
1900,	2	146	+41	......
1901,	2	150	+4	+70

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
TINWARE.				
1896,	5	284	......	......
1897,	5	275	—9	......
1898,	5	278	+3	......
1899,	5	275	—3	......
1900,	5	328	+53	......
1901,	5	461	+133	+177
PAPER MANUFACTORIES.				
1896,	8	1,521	......	......
1897,	8	1,474	—47	......
1898,	8	1,483	+9	......
1899,	8	1,681	+198	......
1900,	8	1,740	+59	......
1901,	8	1,725	—15	+204
WALL PAPER.				
1896,	4	362	......	......
1897,	4	381	+19	......
1898,	4	402	+26	......
1899,	4	401	+1	......
1900,	4	349	—52	......
1901,	4	371	+22	+9
CIGARS.				
1896,	46	6,559	......	......
1897,	46	7,301	+742	......
1898,	46	7,800	+499	......
1899,	46	8,308	+508	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CIGARS—Continued.				
1900,	46	8,668	+360	......
1901,	46	8,866	+198	+2,307
BOOK BINDING.				
1896,	3	138	......	......
1897,	3	137	—1	......
1898,	3	156	+19	......
1899,	3	176	+20	......
1900,	3	188	+12	......
1901,	3	188	......	+50
CORDAGE ROPE AND TWINE.				
1896,	5	2,055	......	......
1897,	5	2,119	+64	......
1898,	5	2,091	—28	......
1899,	5	2,191	+100	......
1900,	5	2,256	+65	......
1901,	5	2,294	+38	+239
PAPER, PAPER BOXES, ENVELOPES, ETC.				
1896,	27	1,826	......	......
1897,	27	1,911	+85	......
1898,	27	2,472	+561	......
1899,	27	2,302	—170	......
1900,	27	2,242	—60	......
1901,	27	2,138	—104	+312

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
POTTERY.				
1896,	2	146	......	......
1897,	2	145	—1	......
1898,	2	153	+8	......
1899,	2	162	+9	......
1900,	2	172	+10	......
1901,	2	171	—1	+25
PAVING BRICK.				
1896,	7	437	......	......
1897,	7	429	—8	......
1898,	7	447	+18	......
1899,	7	528	+81	......
1900,	7	587	+59	......
1901,	7	553	—34	+116
BUILDING BRICK.				
1896,	35	1,939	......	......
1897,	35	1,852	—87	......
1898,	35	1,905	+53	......
1899,	35	1,894	—11	......
1900,	35	1,865	—29	......
1901,	35	1,954	+89	+15
FIRE BRICK.				
1896,	18	1,868	......	......
1897,	18	1,928	+60	......
1898,	18	2,327	+399	......
1899,	18	2,947	+620	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
FIRE BRICK—Continued.				
1900,	18	3,823	+876	......
1901,	18	3,787	—36	+1,919
SLATE ROOFING, ETC, TONNAGE.				
1896,	6	830	......	......
1897,	6	830	......	......
1898,	6	762	—68	......
1899,	6	664	—98	......
1900,	6	764	+100	......
1901,	6	907	+143	+77
SLATE ROOFING, ETC., SQUARES.				
1896,	14	1,254	......	......
1897,	14	1,354	+100	......
1898,	14	1,875	+521	......
1899,	14	1,552	—323	......
1900,	14	1,560	+8	......
1901,	14	1,578	+18	+324
WINDOW GLASS, BOTTLES AND TABLE GOODS.				
1896,	22	7,110	......	......
1897,	22	7,151	+41	......
1898,	22	7,735	+584	......
1899,	22	8,699	+964	......
1900,	22	9,943	+1,244	......
1901,	22	8,820	—1,123	+1,710

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
GLAZED AND CHROME KID.				
1896,	7	2,725	......	......
1897,	7	3,255	+530	......
1898,	7	3,745	+490	......
1899,	7	4,598	+853	......
1900,	7	4,439	—59	......
1901,	7	4,783	+344	+2,058
MEN'S, WOMEN'S, MISSES AND CHILDREN'S SHOES.				
1896,	15	3,401	......	......
1897,	15	3,514	+113	......
1898,	15	3,688	+174	......
1899,	15	3,488	—200	......
1900,	15	3,467	—21	......
1901,	15	3,524	+57	+123
SUSPENDERS.				
1896,	2	110	......	......
1897,	2	120	+10	......
1898,	2	127	+7	......
1899,	2	162	+35	......
1900,	2	212	+50	......
1901,	2	198	—14	+88
HATS AND CAPS.				
1896,	3	490	......	......
1897,	3	489	—1	......
1898,	3	560	+71	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
HATS AND CAPS—Continued.				
1899,	3	560	......	......
1900,	3	614	+54	......
1901,	3	691	+77	+201
FUR AND FELT HATS.				
1896,	4	963	......	......
1897,	4	1,048	+85	......
1898,	4	1,257	+209	......
1899,	4	1,412	+155	......
1900,	4	1,687	+275	......
1901,	4	2,060	+373	+1,097
WOOL HATS.				
1896,	7	395	......	......
1897,	7	447	+52	......
1898,	7	480	+33	......
1899,	7	537	+57	......
1900,	7	563	+26	......
1901,	7	538	—25	+143
UMBRELLAS AND PARASOLS.				
1896,	4	589	......	......
1897,	4	575	—14	......
1898,	4	505	—70	......
1899,	4	531	+26	......
1900,	4	506	—25	......
1901,	4	522	+16	—67

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
DRESS TRIMMINGS, BRAIDS, ETC.				
1896,	8	1,104	......	......
1897,	8	1,393	+289	......
1898,	8	1,543	+150	......
1899,	8	1,760	+217	......
1900,	8	1,745	—15	......
1901,	8	1,669	—76	+565
SHIRTS AND SHIRT WAISTS.				
1896,	9	1,804	......	......
1897,	9	1,819	+15	......
1898,	9	1,993	+174	......
1899,	9	2,294	+301	......
1900,	9	2,338	+44	......
1901,	9	2,419	+81	+615
NECKWEAR.				
1896,	3	190	......	......
1897,	3	174	—16	......
1898,	3	183	+9	......
1899,	3	195	+12	......
1900,	3	189	—6	......
1901,	3	181	—8	—9
COTTON AND WOOLEN CLOTHS.				
1896,	24	4,463	......	......
1897,	24	4,754	+291	......
1898,	24	4,705	—49	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
COTTON AND WOOLEN CLOTHS Continued.				
1899,	24	5,193	+488	......
1900,	24	5,724	+531	......
1901,	24	5,341	—383	+878
CARPETS.				
1896,	17	2,263	......	......
1897,	17	2,704	+441	......
1898,	17	2,753	+49	......
1899,	17	2,834	+81	......
1900,	17	2,794	—40	......
1901,	17	2,801	+7	+538
COTTON GOODS.				
1896,	16	2,807	......	......
1897,	16	2,866	+59	......
1898,	16	3,007	+141	......
1899,	16	3,294	+287	......
1900,	16	3,223	—71	......
1901,	16	3,112	—111	+305
WOOLEN AND WORSTED CASSIMERES.				
1896,	11	1,373	......	......
1897,	11	1,572	+199	......
1898,	11	1,700	+128	......
1899,	11	1,928	+228	......
1900,	11	1,927	—1	......
1901,	11	1,971	+44	+598

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WOOLEN AND WORSTED FABRICS.				
1896,	16	2,783	......	......
1897,	16	3,307	+524	......
1898,	16	3,075	—232	......
1899,	16	3,414	+339	......
1900,	16	3,917	+503	......
1901,	16	3,294	—623	+511
WOOLEN AND WORSTED YARNS.				
1896,	12	1,526	......	......
1897,	12	1,532	+6	......
1898,	12	1,445	—87	......
1899,	12	1,478	+33	......
1900,	12	1,641	+163	......
1901,	12	1,658	+17	+132
RUGS, YARNS, ETC.				
1896,	5	3,134	......	......
1897,	5	3,069	—65	......
1898,	5	2,926	—143	......
1899,	5	3,074	+148	......
1900,	5	3,170	+96	......
1901,	5	3,209	+39	+75
CARPET YARNS.				
1896,	11	563	......	......
1897,	11	625	+62	......
1898,	11	577	—48	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CARPET YARNS—Continued.				
1899,	11	633	+56	......
1900,	11	670	+37	......
1901,	11	688	+18	+125
COTTON YARNS.				
1896,	7	695	......	......
1897,	7	719	+24	......
1898,	7	795	+76	......
1899,	7	800	+5	......
1900,	7	870	+70	......
1901,	7	720	—150	+25
WORSTED WOOLEN AND COTTON YARNS.				
1896,	10	1,634	......	......
1897,	10	1,875	+241	......
1898,	10	1,915	+40	......
1899,	10	1,904	—11	......
1900,	10	2,210	+306	......
1901,	10	2,277	+67	+643
WOOLEN BLANKETS, FLANNELS, ETC.				
1896,	5	717	......	......
1897,	5	719	+2	......
1898,	5	1,063	+344	......
1899,	5	967	—96	......
1900,	5	894	—73	......
1901,	5	912	+18	+195

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
LACE GOODS.				
1896,	3	763	......	......
1897,	3	855	+92	......
1898,	3	974	+119	......
1899,	3	1,098	+124	......
1900,	3	1,251	+153	......
1901,	3	1,238	—13	+475
CHENILLE GOODS.				
1896,	3	610	......	......
1897,	3	668	+58	......
1898,	3	599	—69	......
1899,	3	601	+2	......
1900,	3	654	+53	......
1901,	3	680	+26	+70
UPHOLSTERY GOODS.				
1896,	10	1,938	......	......
1897,	10	2,059	+121	......
1898,	10	2,127	+68	......
1899,	10	2,278	+151	......
1900,	10	2,128	—150	......
1901,	10	2,216	+88	+278
KNIT GOODS, UNDERWEAR.				
1896,	13	2,333	......	......
1897,	13	2,570	+237	......
1898,	13	2,568	—2	......
1899,	13	2,864	+296	......

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
KNIT GOODS, UNDERWEAR—Continued.				
1900,	13	3,188	+324	......
1901,	13	2,980	—208	+647
HOSIERY.				
1896,	31	4,757	......	......
1897,	31	5,606	+849	......
1898,	31	5,917	+311	......
1899,	31	6,146	+229	......
1900,	31	6,593	+447	......
1901,	31	6,756	+163	+1,999
SILK—BROAD GOODS, THROWN SILK, YARNS, ETC.				
1896,	6	2,294	......	......
1897,	6	3,479	+1,185	......
1898,	6	3,789	+310	......
1899,	6	3,601	—188	......
1900,	6	3,790	+189	......
1901,	6	4,033	+243	+1,739
SILK—BROAD GOODS AND RIBBONS.				
1896,	2	1,300	......	......
1897,	2	2,050	+750	......
1898,	2	2,200	+150	......
1899,	2	2,000	—200	......
1900,	2	1,750	—250	......
1901,	2	2,400	+650	+1,100

PERSONS EMPLOYED—Continued.

COMPARISON OF NUMBER OF WAGE EARNERS—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total number of wage earners.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SILK RIBBONS.				
1896,	4	431	......	......
1897,	4	535	+104	......
1898,	4	634	+99	......
1899,	4	644	+10	......
1900,	4	728	+84	......
1901,	4	909	+181	+478

AGGREGATE WAGES PAID.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

NOTE.—In this table the aggregate amount of wages paid by the same establishments for the year 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1896. Eighty-eight industries, representing 801 establishments, are considered.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
STEEL CASTINGS.				
1896,	7	$463,012	$	$
1897,	7	478,303	+$15,291	....
1898,	7	619,179	+140,876	....
1899,	7	838,679	+219,500	....
1900,	7	821,510	—17,169	....
1901,	7	734,578	—86,932	+271,566
STEEL BILLETS, SLABS, BLOOMS, ETC.				
1896,	4	621,985	....	....
1897,	4	630,474	+8,489	....
1898,	4	873,163	+242,689	....
1899,	4	1,239,839	+366,676	....
1900,	4	1,087,913	—151,926	....
1901,	4	1,411,838	+323,925	+789,853
TOOL STEEL.				
1896,	3	88,646	....	....
1897,	3	74,319	—4,327	....
1898,	3	153,303	+78,984	....
1899,	3	140,945	—12,358	....
1900,	3	98,601	—42,344	....
1901,	3	131,830	+33,229	+43,184

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
IRON AND STEEL FORGINGS.				
1896,	7	$121,567	$	$
1897,	7	120,823	—744	....
1898,	7	175,796	+54,973	....
1899,	7	249,106	+73,310	....
1900,	7	263,271	+14,165	....
1901,	7	255,175	—8,096	+133,608
IRON SPECIALTIES.				
1896,	2	17,700	....	....
1897,	2	22,700	+5,000	....
1898,	2	18,700	—4,000	....
1899,	2	18,350	—350	....
1900,	2	20,350	+2,000	....
1901,	2	25,372	+5,022	+7,672
MALLEABLE IRON.				
1896,	4	709,933	....	....
1897,	4	647,054	—62,879	....
1898,	4	776,815	+129,761	....
1899,	4	928,417	+151,602	....
1900,	4	866,482	—61,935	....
1901,	4	939,514	+73,032	+229,581
BOLTS, NUTS, ETC.				
1896,	8	361,981	....	....
1897,	8	308,126	—53,855	....
1898,	8	348,639	+40,513	....
1899,	8	477,994	+129,355	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BOLTS, NUTS, ETC.—Continued.				
1900,	8	$508,683	+$30,689	$
1901,	8	571,990	+63,307	+210,009
WIRE NAILS AND RIVETS.				
1896,	4	158,859	....	....
1897,	4	247,270	+88,411	....
1898,	4	185,422	—61,848	....
1899,	4	244,745	+59,323	....
1900,	4	165,895	—78,850	....
1901,	4	115,167	—50,728	—43,692
TACKS AND SMALL NAILS.				
1896,	4	34,122	....	....
1897,	4	31,752	—2,370	....
1898,	4	24,483	—7,269	....
1899,	4	54,460	+29,977	....
1900,	4	44,982	—9,478	....
1901,	4	49,715	+4,733	+15,593
WIRE.				
1896,	5	44,882	....	....
1897,	5	39,962	—4,920	....
1898,	5	59,750	+19,788	....
1899,	5	77,437	+17,687	....
1900,	5	104,066	+26,629	....
1901,	5	107,069	+3,003	+62,187
WIRE ROPE.				
1896,	2	70,108	....	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WIRE ROPE—Continued.				
1897,	2	$74,810	+$4,702	$
1898,	2	88,858	+14,048	....
1899,	2	113,217	+24,359	....
1900,	2	164,517	+51,300	....
1901,	2	169,682	+5,165	+99,574
WIRE GOODS.				
1896,	5	56,708	....	....
1897,	5	66,854	+10,146	....
1898,	5	63,323	—3,531	....
1899,	5	82,879	+19,556	....
1900,	5	64,328	—18,551	....
1901,	5	72,771	+8,443	+16,063
WAGON AND CARRIAGE AXLES AND SPRINGS.				
1896,	6	171,015	....	....
1897,	6	179,198	+8,183	....
1898,	6	210,517	+31,319	....
1899,	6	257,772	+47,255	....
1900,	6	237,358	—20,414	....
1901,	6	306,789	+69,431	+135,774
SCALES, ETC.				
1896,	4	66,550	....	....
1897,	4	69,185	+2,635	....
1898,	4	75,860	+6,675	....
1899,	4	96,360	+20,500	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SCALES, ETC.—Continued.				
1900,	4	$105,851	+$9,491	$
1901,	4	111,951	+6,100	+45,401
STOVES, RANGES, HEATERS, ETC.				
1896,	37	1,626,876	....	....
1897,	37	1,647,548	+20,672	....
1898,	37	1,153,955	—493,593	....
1899	37	1,970,880	+816,925	....
1900,	37	2,126,605	+155,725	....
1901,	37	2,084,170	—42,435	+457,294
BATH BOILERS, TANKS, ETC.				
1896,	2	12,091	....	....
1897,	2	12,498	+407	....
1898,	2	13,611	+1,113	....
1899,	2	19,448	+5,837	....
1900,	2	16,804	—2,644	....
1901,	2	20,030	+3,226	+7,939
HARDWARE SPECIALTIES.				
1896,	14	1,004,650	....	....
1897,	14	1,053,746	+49,096	....
1898,	14	1,127,879	+74,133	....
1899,	14	1,428,934	+301,055	....
1900,	14	1,226,396	—202,538	....
1901,	14	1,349,901	+123,505	+345,251

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
EDGE TOOLS.				
1896,	12	$356,401	$	$
1897,	12	304,988	—51,413	....
1898,	12	401,694	+96,706	....
1899,	12	474,562	+72,868	....
1900,	12	507,597	+33,035	....
1901,	12	494,080	—13,517	+137,679
WRENCHES, PICKS, ETC.				
1896,	5	106,369	....	....
1897,	5	123,034	+16,665	....
1898,	5	139,125	+16,091	....
1899,	5	179,408	+40,283	....
1900,	5	184,711	+5,303	....
1901,	5	183,238	—1,473	+76,869
LOCOMOTIVES AND CARS BUILT AND REPAIRED.				
1896,	3	3,035,897	....	....
1897,	3	3,019,356	—16,541	....
1898,	3	3,411,544	+392,188	....
1899,	3	4,049,295	+637,751	....
1900,	3	4,366,592	+317,297	....
1901,	3	4,593,043	+226,451	+1,557,146
WROUGHT IRON PIPE AND TUBES.				
1896,	5	2,170,688	....	....
1897,	5	2,045,620	—125,068	....
1898,	5	2,451,501	+405,881	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WROUGHT IRON PIPE AND TUBES—Continued.				
1899,	5	$4,566,297	+$2,114,796	$
1900,	5	2,575,403	—1,990,894	....
1901,	5	3,301,349	+725,946	+1,130,661
CAST IRON PIPE.				
1896,	3	209,338	....	....
1897,	3	250,934	+41,596	....
1898,	3	263,550	+12,616	....
1899,	3	260,355	—3,195	....
1900,	3	357,650	+97,295	....
1901,	3	402,535	+44,885	+193,197
BRASS, COPPER AND BRONZE GOODS.				
1896,	19	496,402	....	....
1897,	19	482,428	—13,974	....
1898,	19	575,651	+93,223	....
1899,	19	661,456	+85,805	....
1900,	19	742,750	+81,294	....
1901,	19	845,903	+103,153	+349,501
IRON AND STEEL BRIDGES.				
1896,	7	590,081	....	....
1897,	7	564,817	—25,264	....
1898,	7	647,664	+82,847	....
1899,	7	722,759	+75,095	....
1900,	7	1,235,666	+512,907	....
1901,	7	1,176,736	—58,930	+586,655

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
LOCOMOTIVES, STATIONARY ENGINES, ETC.				
1896,	9	$3,137,295	$	$
1897,	9	3,032,837	—104,458	....
1898,	9	4,559,167	+1,526,330	....
1899,	9	5,764,855	+1,205,688	....
1900,	9	7,274,385	+1,509,530	....
1901,	9	8,314,869	+1,040,484	+5,177,574
ENGINES, BOILERS, ETC.				
1896,	10	1,003,538	....	....
1897,	10	840,896	—162,642	....
1898,	10	996,882	+155,986	....
1899,	10	1,185,494	+188,612	....
1900,	10	1,309,636	+124,142	....
1901,	10	1,425,785	+116,149	+422,247
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES.				
1896,	12	971,616	....	....
1897,	12	928,180	—43,436	....
1898,	12	1,491,520	+563,340	....
1899,	12	3,359,489	+1,867,969	....
1900,	12	4,865,877	+1,506,388	....
1901,	12	5,245,106	+379,229	+4,273,490
IRON VESSELS AND ENGINES.				
1896,	3	2,320,747	....	....
1897,	3	1,881,993	—438,754	....
1898,	3	2,880,847	+998,854	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON VESSELS AND ENGINES —Continued.				
1899,	3	$3,428,153	+$547,306	$
1900,	3	3,538,223	+110,070	....
1901,	3	3,587,294	+49,071	+1,266,547
BOILERS, TANKS, STACKS, ETC.				
1896,	21	542,277	....	....
1897,	21	535,025	—7,252	....
1898,	21	639,883	+104,858	....
1899,	21	780,279	+140,396	....
1900,	21	893,362	+113,083	....
1901,	21	1,060,002	+166,640	+517,725
MACHINERY.				
1896,	21	1,955,967	....	....
1897,	21	1,970,570	+14,603	....
1898,	21	2,402,335	+431,765	....
1899,	21	3,122,970	+720,635	....
1900,	21	3,292,239	+169,269	....
1901,	21	3,497,092	+204,853	+1,541,125
FOUNDRIES AND MACHINE SHOPS.				
1896,	25	957,628	....	....
1897,	25	995,718	+38,090	....
1898,	25	1,184,333	+188,615	....
1899,	25	1,570,135	+385,802	....
1900,	25	1,748,800	+178,665	....
1901,	25	1,975,184	+226,384	+1,017,556

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
FILES, ETC.				
1896,	2	$108,895	$	$
1897,	2	110,805	+1,910	....
1898,	2	117,553	+6,748	....
1899,	2	136,071	+18,518	....
1900,	2	140,544	+4,473	....
1901,	2	154,565	+14,021	+45,670
SAWS.				
1896,	3	25,745	....	....
1897,	3	21,557	—4,188	....
1898,	3	22,939	+1,382	....
1899,	3	24,100	+1,161	....
1900,	3	32,108	+8,008	....
1901,	3	33,271	+163	+7,526
PLUMBER SUPPLIES.				
1896,	3	418,864	....	....
1897,	3	377,194	—41,670	....
1898,	3	432,969	+55,775	....
1899,	3	502,827	+69,858	....
1900,	3	504,686	+1,859	....
1901,	3	527,899	+23,213	+109,035
ELECTRICAL SUPPLIES.				
1896,	4	1,276,087	....	....
1897,	4	1,184,647	—91,440	....
1898,	4	1,929,920	+745,273	....
1899,	4	2,856,814	+926,894	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
ELECTRICAL SUPPLIES—Continued.				
1900,	4	$3,517,368	+$660,554	$
1901,	4	4,116,501	+599,133	+2,840,414
SHOVELS, SPADES, SCOOPS, ETC.				
1896,	8	217,581	....	....
1897,	8	202,067	—15,514	....
1898,	8	236,593	+34,526	....
1899,	8	291,969	+55,376	....
1900,	8	230,909	—61,060	....
1901,	8	289,145	+58,236	+71,564
SAFES AND VAULT DOORS.				
1896,	2	54,556	....	....
1897,	2	59,906	+5,350	....
1898,	2	61,012	+1,106	....
1899,	2	59,965	—1,047	....
1900,	2	79,594	+19,629	....
1901,	2	101,832	+22,238	+47,276
METAL AND METALLIC GOODS.				
1896,	3	58,892	....	....
1897,	3	65,704	+6,812	....
1898,	3	74,084	+8,380	....
1899,	3	106,846	+32,762	....
1900,	3	116,057	+9,211	....
1901,	3	117,163	+1,106	+58,271

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
BUILDING AND STRUCTURAL IRON WORK.				
1896,	2	$382,148	$	$
1897,	2	344,442	—37,706	....
1898,	2	441,539	+97,097	....
1899,	2	657,942	+216,403	....
1900,	2	879,148	+221,206	....
1901,	2	1,199,639	+320,491	+817,491
IRON CHAINS.				
1896,	5	91,526	....	....
1897,	5	96,671	+5,145	....
1898,	5	120,291	+23,620	....
1899,	5	140,403	+20,112	....
1900,	5	124,543	—15,860	....
1901,	5	142,794	+18,251	+51,268
IRON FENCES AND RAILINGS.				
1896,	7	37,512	....	....
1897,	7	48,923	+11,411	....
1898,	7	57,197	+8,274	....
1899,	7	69,864	+12,667	....
1900,	7	88,304	+18,440	....
1901,	7	103,420	+15,116	+65,908
AGRICULTURAL IMPLEMENTS.				
1896,	12	575,390	....	....
1897,	12	590,787	+15,397	....
1898,	12	696,721	+105,934	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
AGRICULTURAL IMPLEMENTS —Continued.				
1899,	12	$762,800	+$66,079	$
1900,	12	763,373	+573	....
1901,	12	817,229	+53,856	+241,839
STEAM PUMPS.				
1896,	2	121,368	....	....
1897,	2	103,105	—18,263	....
1898,	2	112,032	+8,927	....
1899,	2	166,746	+54,714	....
1900,	2	193,157	+26,411	....
1901,	2	160,245	—32,912	+38,877
BICYCLES.				
1896,	3	117,134	....	....
1897,	3	155,444	+38,310	....
1898,	3	154,962	—482	....
1899,	3	127,384	—27,578	....
1900,	3	97,992	—29,392	....
1901,	3	55,269	—42,723	—61,865
PIANOS AND ORGANS.				
1896,	2	33,894	....	....
1897,	2	33,542	—352	....
1898,	2	45,882	+12,340	....
1899,	2	48,127	+2,245	....
1900,	2	63,243	+15,116	....
1901,	2	65,460	+2,217	+31,566

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
TINWARE.				
1896,	5	$107,539	$	$
1897,	5	106,907	—632	....
1898,	5	103,119	—3,788	....
1899,	5	118,410	+15,291	....
1900,	5	134,105	+15,695	....
1901,	5	170,087	+35,982	+62,548
PAPER MANUFACTORIES.				
1896,	8	580,874	....	....
1897,	8	588,144	+7,270	....
1898,	8	591,810	+3,666	....
1899,	8	688,257	+96,447	....
1900,	8	768,824	+80,567	....
1901,	8	738,509	—30,315	+157,635
WALL PAPER.				
1896,	4	116,068	....	....
1897,	4	124,043	+7,975	....
1898,	4	139,400	+15,357	....
1899,	4	143,741	+4,341	....
1900,	4	158,741	+15,000	....
1901,	4	157,042	—1,699	+40,974
CIGARS.				
1896,	46	1,813,388	....	....
1897,	46	2,044,125	+230,737	....
1898,	46	2,235,665	+191,540	....
1899,	46	2,424,293	+188,628	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CIGARS—Continued.				
1900,	46	$2,653,246	+$228,953	$
1901,	46	2,698,783	+45,537	+885,395
BOOK BINDING.				
1896,	3	64,957	....	....
1897,	3	66,378	+1,421	....
1898,	3	75,293	+8,915	....
1899,	3	86,318	+11,025	....
1900,	3	98,563	+12,245	....
1901,	3	103,717	+5,154	+38,760
CORDAGE, ROPE AND TWINE.				
1896,	5	618,977	....	....
1897,	5	683,523	+64,546	....
1898,	5	674,993	—8,530	....
1899,	5	792,522	+117,529	....
1900,	5	742,246	—50,276	....
1901,	5	785,781	+43,535	+166,804
PAPER, PAPER BOXES, ENVELOPES, ETC.				
1896,	27	494,654	....	....
1897,	27	511,220	+16,566	....
1898,	27	567,743	+56,523	....
1899,	27	678,205	+110,462	....
1900,	27	604,789	—73,416	....
1901,	27	597,941	—6,848	+103,287
POTTERY.				
1896,	2	72,562	....	....
1897,	2	68,011	—4,551	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
POTTERY—Continued.				
1898,	2	$73,799	+$5,788	$
1899,	2	78,658	+4,859	....
1900,	2	78,307	—351	....
1901,	2	83,136	+4,829	+10,574
PAVING BRICK.				
1896,	7	142,710	....	....
1897,	7	144,002	+1,292	....
1898,	7	148,144	+4,142	....
1899,	7	176,133	+27,989	....
1900,	7	237,666	+61,533	....
1901,	7	206,868	—30,798	+64,158
BUILDING BRICK.				
1896,	35	662,481	....	....
1897,	35	657,846	—4,635	....
1898,	35	653,415	—4,431	....
1899,	35	692,770	+39,355	....
1900,	35	681,720	—11,050	....
1901,	35	733,827	+52,107	+71,346
FIRE BRICK.				
1896,	18	727,162	....	....
1897,	18	719,308	—7,854	....
1898,	18	843,336	+124,028	....
1899,	18	1,133,377	+290,041	....
1900,	18	1,602,426	+469,049	....
1901,	18	1,622,430	+20,004	+895,268

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
SLATE ROOFING, ETC., TONNAGE.				
1896,	6	$251,993	$	$
1897,	6	270,398	+18,405	....
1898,	6	250,225	—20,173	....
1899,	6	219,276	—30,949	....
1900,	6	280,065	+60,789	....
1901,	6	362,028	+81,963	+10,035
SLATE ROOFING, ETC., SQUARES.				
1896,	14	397,384	....	....
1897,	14	434,572	+37,188	....
1898,	14	472,437	+37,865	....
1899,	14	544,953	+72,516	....
1900,	14	565,623	+20,670	....
1901,	14	615,681	+50,058	+218,297
WINDOW GLASS, BOTTLES AND TABLE GOODS.				
1896,	22	2,690,298	....	....
1897,	22	2,991,339	+301,041	....
1898,	22	3,412,343	+421,004	....
1899,	22	4,043,313	+630,970	....
1900,	22	4,570,920	+527,607	....
1901,	22	3,971,494	—599,426	+1,281,196
GLAZED AND CHROME KID.				
1896,	7	962,342	....	....
1897,	7	1,285,138	+322,796	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
GLAZED AND CHROME KID—Continued.				
1898,	7	$1,472,762	+$187,624	$
1899,	7	1,907,913	+435,151	....
1900,	7	1,759,101	—148,812	....
1901,	7	2,111,284	+352,183	+1,148,942
MEN'S, WOMEN'S, MISSES' AND CHILDREN'S SHOES.				
1896,	15	1,173,935	....	....
1897,	15	1,250,818	+76,883	....
1898,	15	1,325,230	+7,4412	....
1899,	15	1,335,825	+10,595	....
1900,	15	1,299,922	—35,903	....
1901,	15	1,347,012	+47,090	+173,077
SUSPENDERS.				
1896,	2	30,936	....	....
1897,	2	33,936	+3,000	....
1898,	2	41,000	+7,064	....
1899,	2	61,150	+20,150	....
1900,	2	76,250	+15,100	....
1901,	2	61,400	—14,850	+30,464
HATS AND CAPS.				
1896,	3	121,160	....	....
1897,	3	179,336	+58,176	....
1898,	3	176,383	—2,953	....
1899,	3	191,909	+15,526	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
HATS AND CAPS—Continued.				
1900,	3	$211,921	+$20,012	$
1901,	3	244,900	+32,978	+123,740
FUR AND FELT HATS.				
1896,	4	385,170	....	....
1897,	4	514,651	+129,481	....
1898,	4	595,085	+80,834	....
1899,	4	665,296	+70,211	....
1900,	4	808,461	+143,165	....
1901,	4	980,610	+172,149	+595,440
WOOL HATS.				
1896,	7	125,792	....	....
1897,	7	143,074	+17,282	....
1898,	7	140,773	—2,301	....
1899,	7	163,164	+22,391	....
1900,	7	217,479	+54,315	....
1901,	7	187,791	—29,688	+61,999
UMBRELLAS AND PARASOLS.				
1896,	4	136,441	....	....
1897,	4	170,504	+34,063	....
1898,	4	135,627	—34,897	....
1899,	4	144,650	+9,023	....
1900,	4	135,101	—9,549	....
1901,	4	144,419	+9,318	+7,978

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
DRESS TRIMMINGS, BRAIDS, ETC.				
1896,	8	$299,043	$	$
1897,	8	380,240	+81,197	....
1898,	8	413,277	+33,037	....
1899,	8	479,688	+66,411	....
1900,	8	533,502	+53,814	....
1901,	8	494,333	—39,169	+195,290
SHIRTS AND SHIRT WAISTS.				
1896,	9	527,371	....	....
1897,	9	494,680	—32,691	....
1898,	9	539,135	+44,455	....
1899,	9	687,095	+147,960	....
1900,	9	733,667	+46,572	....
1901,	9	774,447	+40,780	+247,076
NECKWEAR.				
1896,	3	72,910	....	....
1897,	3	62,988	—9,922	....
1898,	3	68,975	+5,987	....
1899,	3	73,883	+4,908	....
1900,	3	69,247	—4,636	....
1901,	3	57,388	—11,859	—15,522
COTTON AND WOOLEN CLOTHS.				
1896,	24	1,418,449	....	....
1897,	24	1,643,929	+225,480	....
1898,	24	1,646,482	+2,553	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
COTTON AND WOOLEN CLOTHS —Continued.				
1899,	24	$1,934,224	+$287,742	$
1900,	24	1,994,236	+60,012	....
1901,	24	1,878,847	—115,389	+460,398
CARPETS.				
1896,	17	784,416	....	....
1897,	17	986,918	+202,502	....
1898,	17	998,647	+11,729	....
1899,	17	1,177,796	+179,149	....
1900,	17	1,162,693	—15,103	....
1901,	17	1,254,800	+92,107	+470,384
COTTON GOODS.				
1896,	16	794,137	....	....
1897,	16	896,055	+101,918	....
1898,	16	965,037	+68,982	....
1899,	16	1,103,648	+138,611	....
1900,	16	1,111,846	+8,198	....
1901,	16	1,045,654	—66,192	+251,517
WOOLEN AND WORSTED CASSIMERES.				
1896,	11	419,961	....	....
1897,	11	523,351	+103,390	....
1898,	11	565,281	+41,930	....
1899,	11	673,336	+108,055	....
1900,	11	691,354	+18,018	....
1901,	11	694,124	+2,770	+274,163

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WOOLEN AND WORSTED FABRICS.				
1896,	16	$788,163	$	$
1897,	16	1,045,039	+256,876	....
1898,	16	1,066,441	+21,402	....
1899,	16	1,217,967	+151,526	....
1900,	16	1,356,306	+138,339	....
1901,	16	1,138,513	—217,793	+350,350
WOOLEN AND WORSTED YARNS.				
1896,	12	411,043	....	....
1897,	12	491,309	+80,266	....
1898,	12	453,110	—38,199	....
1899.	12	534,400	+81,290	....
1900,	12	531,039	—3,361	....
1901,	12	578,871	+47,832	+167,828
RUGS, YARNS, ETC.				
1896,	5	1,011,165	....	....
1897,	5	983,588	—27,577	....
1898,	5	996,501	+12,913	....
1899,	5	1,172,575	+176,074	....
1900,	5	1,173,598	+1,023	....
1901,	5	1,179,748	+6,150	+168,583
CARPET YARNS.				
1896,	11	189,053	....	....
1897,	11	233,191	+44,138	....
1898,	11	192,218	—40,973	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CARPET YARNS—Continued.				
1899,	11	$242,414	+$50,196	$
1900,	11	244,411	+1,997	....
1901,	11	265,572	+21,161	+76,519
COTTON YARNS.				
1896,	7	188,970	....	....
1897,	7	201,809	+12,839	....
1898,	7	239,109	+37,300	....
1899,	7	244,291	+5,182	....
1900,	7	261,937	+17,646	....
1901,	7	229,243	—32,694	+40,273
WORSTED, WOOLEN AND COTTON YARNS.				
1896,	10	462,651	....	....
1897,	10	562,424	+99,773	....
1898,	10	541,000	—21,424	....
1899,	10	655,368	+114,368	....
1900,	10	653,421	—1,947	....
1901,	10	616,151	—37,270	+153,500
WOOLEN BLANKETS, FLANNELS, ETC.				
1896,	5	257,057	....	....
1897,	5	264,403	+7,346	....
1898,	5	350,302	+85,899	....
1899,	5	322,275	—28,027	....
1900,	5	323,711	+1,436	....
1901,	5	299,492	—24,219	+42,435

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
LACE GOODS.				
1896,	3	$193,765	$	$
1897,	3	223,436	+29,671	....
1898,	3	269,910	+46,474	....
1899,	3	313,641	+43,731	....
1900,	3	372,460	+58,819	....
1901,	3	382,726	+10,266	+188,961
CHENILLE GOODS.				
1896,	3	138,438	....	....
1897,	3	169,224	+30,786	....
1898,	3	171,041	+1,817	....
1899,	3	203,598	+32,557	....
1900,	3	251,665	+48,067	....
1901,	3	270,854	+19,189	+132,416
UPHOLSTERY GOODS.				
1896,	10	674,424	....	....
1897,	10	765,506	+91,082	....
1898,	10	847,374	+81,868	....
1899,	10	921,752	+74,378	....
1900,	10	842,390	—79,362	....
1901,	10	914,677	+72,287	+240,253
KNIT GOODS, UNDERWEAR.				
1896,	13	611,923	....	....
1897,	13	674,072	+62,149	....
1898,	13	686,552	+12,480	....

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
KNIT GOODS, UNDERWEAR—Continued.				
1899,	13	$790,868	+$104,316	$
1900,	13	811,968	+21,100	....
1901,	13	766,663	—45,305	+154,740
HOSIERY.				
1896,	31	1,130,215	....	....
1897,	31	1,377,150	+246,935	....
1898,	31	1,483,567	+106,417	....
1899,	31	1,610,552	+126,985	....
1900,	31	1,796,880	+186,328	....
1901,	31	1,874,579	+77,699	+744,364
SILK—BROAD GOODS, THROWN SILK, YARNS, ETC.				
1896,	6	579,144	....	....
1897,	6	796,504	+217,360	....
1898,	6	907,095	+110,591	....
1899,	6	963,224	+56,129	....
1900,	6	896,322	—66,902	....
1901,	6	886,216	—10,106	+307,072
SILK—BROAD GOODS AND RIBBONS.				
1896,	2	325,323	....	....
1897,	2	477,694	+152,371	....
1898,	2	516,061	+38,367	....
1899,	2	522,612	+6,551	....
1900,	2	465,000	—57,612	....
1901,	2	542,822	+77,822	+217,499

AGGREGATE WAGES PAID—Continued.

COMPARISON OF AGGREGATE AMOUNT OF WAGES PAID—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Aggregate wages paid.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SILK—RIBBONS.				
1896,	4	$125,802	$	$
1897,	4	187,491	+61,689	....
1898,	4	213,252	+25,761	....
1899,	4	217,812	+4,560	....
1900,	4	221,341	+3,529	....
1901,	4	313,691	+92,350	+187,889

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

NOTE.—In this table the value of average annual product per employe by the same establishments for the years 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1896. Eighty-eight industries, representing 801 establishments, are considered.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
STEEL CASTINGS.				
1896,	7	$1,472 49	$	$
1897,	7	1,302 45	—170 04	....
1898,	7	1,539 94	+237 49	....
1899,	7	1,676 21	+136 27	....
1900,	7	1,822 00	+145 79	....
1901,	7	1,720 23	—101 77	+247 74
STEEL BILLETS, SLABS, BLOOMS, ETC.				
1896,	4	5,135 93	....	....
1897,	4	8,224 72	+3,088 79	....
1898,	4	6,954 01	—1,270 71	....
1899,	4	10,450 85	+3,496 84	....
1900,	4	8,709 49	—1,741 36	....
1901,	4	9,789 41	+1,079 92	+4,653 48
TOOL STEEL.				
1896,	3	2,711 26	....	....
1897,	3	1,698 30	—1,012 96	....
1898,	3	2,079 74	+381 44	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
TOOL STEEL—Continued.				
1899,	3	$2,294 16	+$214 42	$
1900,	3	3,305 61	+1,011 45	....
1901,	3	3,976 63	+671 02	+1,265 37
IRON AND STEEL FORGINGS.				
1896,	7	1,047 89	....	....
1897,	7	1,292 28	+244 39	....
1898,	7	1,456 05	+163 77	....
1899,	7	1,985 45	+529 40	....
1900,	7	1,942 38	—43 07	....
1901,	7	1,565 97	—356 41	+518 08
IRON SPECIALTIES.				
1896,	2	2,107 19	....	....
1897,	2	2,648 16	+540 97	....
1898,	2	2,231 63	—416 53	....
1899,	2	2,594 20	+362 57	....
1900,	2	2,136 39	—457 81	....
1901,	2	1,995 28	—141 11	—111 91
MALLEABLE IRON.				
1896,	4	1,227 37	....	....
1897,	4	1,159 02	—68 35	....
1898,	4	1,395 31	+236 29	....
1899,	4	1,533 17	+137 86	....
1900,	4	1,487 38	—45 79	....
1901,	4	1,130 57	—356 81	—96 80

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BOLTS, NUTS, ETC.				
1896,	8	$1,347 46	$	$
1897,	8	1,265 00	—82 46	....
1898,	8	1,410 00	+145 00	....
1899,	8	1,944 63	+534 63	....
1900,	8	2,147 79	+203 16	....
1901,	8	1,599 49	—548 30	+252 03
WIRE NAILS AND RIVETS.				
1896,	4	1,853 21	....	....
1897,	4	2,321 18	+467 97	....
1898,	4	1,661 58	—659 60	....
1899,	4	2,488 14	+826 56	....
1900,	4	1,659 10	—829 04	....
1901,	4	3,120 06	+1,460 96	+1,266 85
TACKS AND SMALL NAILS.				
1896,	4	980 92	....	....
1897,	4	939 58	—41 34	....
1898,	4	1,384 73	+445 15	....
1899,	4	1,219 27	—165 46	....
1900,	4	1,214 83	—4 44	....
1901,	4	1,412 17	+197 34	+431 25
WIRE.				
1896,	5	2,352 20	....	....
1897,	5	2,118 09	—234 11	....
1898,	5	2,190 63	+72 54	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WIRE—Continued.				
1899,	5	$1,914 47	—$276 16	$
1900,	5	1,781 85	—132 62	....
1901,	5	1,781 28	—57	—570 92
WIRE ROPE.				
1896,	2	3,892 43	....	....
1897,	2	3,591 52	—300 91	....
1898,	2	3,449 82	—141 70	....
1899,	2	4,185 85	+736 03	....
1900,	2	4,302 00	+116 15	....
1901,	2	4,310 23	+8 23	+417 80
WIRE GOODS.				
1896,	5	1,118 66	....	....
1897,	5	1,206 10	+87 44	....
1898,	5	1,419 16	+213 06	....
1899,	5	1,541 11	+121 95	....
1900,	5	1,647 49	+106 38	....
1901,	5	1,555 36	—92 13	+436 70
WAGON AND CARRIAGE AXLES AND SPRINGS.				
1896,	6	1,542 44	....	....
1897,	6	1,571 63	+29 19	....
1898,	6	1,602 49	+30 86	....
1899,	6	1,851 65	+249 16	....
1900,	6	1,559 49	—292 16	....
1901,	6	1,403 96	—155 53	—138 48

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SCALES, ETC.				
1896,	4	$2,067 18	$	$
1897,	4	2,047 25	—19 93	....
1898,	4	1,965 40	—81 85	....
1899,	4	2,179 18	+213 78	....
1900,	4	2,118 85	—60 33	....
1901,	4	2,189 00	+70 15	+121 82
STOVES, RANGES, HEATERS, ETC.				
1896,	37	1,192 84	....	....
1897,	37	1,179 07	—13 77	....
1898,	37	1,165 53	—13 54	....
1899,	37	1,369 98	+204 45	....
1900,	37	1,426 51	+56 53	....
1901,	37	1,337 94	—88 57	+145 10
BATH BOILERS, TANKS, ETC.				
1896,	2	2,353 31	....	....
1897,	2	2,274 97	—78 34	....
1898,	2	1,940 69	—334 28	....
1899,	2	1,993 13	+52 44	....
1900,	2	2,174 71	+181 58	....
1901,	2	2,180 86	+6 15	—172 45
HARDWARE SPECIALTIES.				
1896,	14	949 63	....	....
1897,	14	1,016 45	+66 82	....
1898,	14	983 62	—32 83	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
HARDWARE SPECIALTIES—Continued.				
1899,	14	$1,161 16	+$177 54	$
1900,	14	1,059 47	—101 69	....
1901,	14	1,154 92	+95 45	+205 29
EDGE TOOLS.				
1896,	12	1,324 04	....	....
1897,	12	945 38	—378 66	....
1898,	12	1,217 76	+272 38	....
1899,	12	1,368 65	+150 89	....
1900,	12	1,502 71	+134 06	....
1901,	12	1,357 20	—145 51	+33 16
WRENCHES, PICKS, ETC.				
1896,	5	1,463 93	....	....
1897,	5	1,576 94	+113 01	....
1898,	5	1,816 39	+239 45	....
1899,	5	2,010 26	+193 87	....
1900,	5	1,789 08	—221 18	....
1901,	5	1,997 45	+208 37	+533 52
LOCOMOTIVES AND CARS BUILT AND REPAIRED.				
1896,	3	1,116 72	....	....
1897,	3	1,138 02	+21 30	....
1898,	3	1,341 22	+203 20	....
1899,	3	1,505 69	+164 47	....
1900,	3	1,559 32	+53 63	....
1901,	3	1,550 10	—9 22	+433 38

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WROUGHT IRON PIPE AND TUBES.				
1896, ...	5	$2,236 56	$	$
1897, ...	5	2,219 49	—17 07	....
1898, ...	5	2,556 27	+336 78	....
1899, ...	5	2,988 46	+432 19	....
1900, ...	5	3,937 82	+949 36	....
1901, ...	5	4,165 12	+227 30	+1,928 56
CAST IRON PIPE.				
1896, ...	3	1,701 48	....	....
1897, ...	3	1,925 59	+224 11	....
1898, ...	3	1,828 79	—96 80	....
1899, ...	3	1,825 41	—3 38	....
1900, ...	3	2,189 73	+364 32	....
1901, ...	3	2,383 22	+193 49	+681 74
BRASS, COPPER AND BRONZE GOODS.				
1896, ...	19	1,833 65	....	....
1897, ...	19	1,688 70	—144 95	....
1898, ...	19	1,821 01	+132 31	....
1899, ...	19	2,355 57	+534 56	....
1900, ...	19	2,204 33	—151 24	....
1901, ...	19	2,312 24	+107 91	+478 59
IRON AND STEEL BRIDGES.				
1896, ...	7	2,933 39	....	....
1897, ...	7	2,646 87	—286 52	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON AND STEEL BRIDGES—Continued.				
1898,	7	$2,612 24	—$34 63	$
1899,	7	3,032 80	+420 56	....
1900,	7	3,873 45	+840 65	....
1901,	7	3,098 51	—774 94	+165 12
LOCOMOTIVES, STATIONERY ENGINES, ETC.				
1896,	9	1,573 66	....	....
1897,	9	1,509 67	—63 99	....
1898,	9	1,614 48	+104 81	....
1899,	9	1,788 20	+173 72	....
1900,	9	2,049 49	+261 29	....
1901,	9	2,037 49	—12 00	+463 83
ENGINES, BOILERS, ETC.				
1896,	10	1,680 91	....	....
1897,	10	1,573 15	—107 76	....
1898,	10	1,622 24	+49 09	....
1899,	10	2,114 72	+492 48	....
1900,	10	2,144 41	+29 69	....
1901,	10	2,013 73	—130 68	+332 82
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES.				
1896,	12	2,055 12	....	....
1897,	12	1,890 35	—164 77	....
1898,	12	2,628 62	+738 27	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES—Continued.				
1899,	12	$2,924 26	+$295 64	$
1900,	12	3,310 84	+386 58	....
1901,	12	2,945 35	—365 49	+890 23
IRON VESSELS AND ENGINES.				
1896,	3	1,234 24	....	....
1897,	3	1,331 14	+96 90	....
1898,	3	1,232 34	—98 80	....
1899,	3	1,481 22	+248 88	....
1900,	3	1,806 65	+325 43	....
1901,	3	1,694 24	—112 41	+460 00
BOILERS, TANKS, STACKS, ETC.				
1896,	21	1,680 63	....	....
1897,	21	1,688 25	+7 62	....
1898,	21	1,771 47	+83 22	....
1899,	21	2,123 40	+351 93	....
1900,	21	2,113 32	—10 08	....
1901,	21	2,228 71	—115 39	+548 08
MACHINERY.				
1896,	21	1,450 69	....	....
1897,	21	1,414 95	—35 74	....
1898,	21	1,466 16	+51 21	....
1899,	21	1,550 68	+84 52	....
1900,	21	1,650 48	+99 80	....
1901,	21	1,654 59	+4 11	+203 90

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
FOUNDRIES AND MACHINE SHOPS.				
1896,	25	$1,242 69	$	$
1897,	25	1,411 48	+168 79	....
1898,	25	1,459 58	+48 10	....
1899,	25	1,675 67	+216 09	....
1900,	25	1,831 19	+155 52	....
1901,	25	1,632 12	—199 07	+389 43
FILES, ETC.				
1896,	2	970 46	....	....
1897,	2	952 40	—18 06	....
1898,	2	1,085 27	+132 87	....
1899,	2	1,159 81	+74 54	....
1900,	2	1,131 23	—28 58	....
1901,	2	1,420 09	+288 86	+449 63
SAWS.				
1896,	3	1,574 75	....	....
1897,	3	1,428 75	—146 00	....
1898,	3	1,624 21	+195 46	....
1899,	3	1,779 23	+155 02	....
1900,	3	2,359 02	+579 79	....
1901,	3	2,253 09	—105 93	+678 34
PLUMBER SUPPLIES.				
1896,	3	1,122 92	....	....
1897,	3	1,044 52	—78 40	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
PLUMBER SUPPLIES—Continued.				
1898,	3	$1,136 85	+$92 33	$
1899,	3	1,373 48	+236 63	....
1900,	3	1,241 87	—131 61	....
1901,	3	1,318 19	+76 32	+195 27
ELECTRICAL SUPPLIES.				
1896,	4	1,445 20	....	....
1897,	4	1,594 02	+148 82	....
1898,	4	1,949 52	+355 50	....
1899,	4	2,211 11	+261 59	....
1900,	4	2,487 59	+276 48	....
1901,	4	2,259 79	—227 80	+814 59
SHOVELS, SPADES, SCOOPS, ETC.				
1896,	8	1,492 80	....	....
1897,	8	1,571 52	+78 72	....
1898,	8	1,888 85	+317 33	....
1899,	8	2,653 55	+764 70	....
1900,	8	2,133 03	—520 52	....
1901,	8	2,723 76	+590 73	+1,230 96
SAFES AND VAULT DOORS.				
1896,	2	1,183 95	....	....
1897,	2	1,259 81	+75 86	....
1898,	2	1,265 17	+5 36	....
1899,	2	1,306 44	+41 27	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SAFES AND VAULT DOORS—Continued.				
1900,	2	$1,432 10	+$125 66	$
1901,	2	1,489 00	+56 90	+305 05
METAL AND METALLIC GOODS.				
1896,	3	834 99	....	....
1897,	3	889 37	+54 38	....
1898,	3	922 20	+32 83	....
1899,	3	1,118 88	+196 68	....
1900,	3	1,127 85	+8 97	....
1901,	3	1,368 75	+240 90	+533 76
BUILDING AND STRUCTURAL IRON WORK.				
1896,	2	1,589 30	....	....
1897,	2	1,887 14	+297 84	....
1898,	2	2,446 66	+559 52	....
1899,	2	1,739 98	—706 68	....
1900,	2	2,725 17	+985 19	....
1901,	2	2,801 16	+75 99	+1,211 86
IRON CHAINS.				
1896,	5	1,433 15	....	....
1897,	5	1,456 06	+22 91	....
1898,	5	1,521 58	+65 52	....
1899,	5	1,953 54	+431 96	....
1900,	5	1,925 95	—27 59	....
1901,	5	1,948 59	+22 64	+515 44

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON FENCES AND RAILINGS.				
1896,	7	$1,512 67	$	$
1897,	7	1,456 41	—56 26	....
1898,	7	1,484 60	+28 19	....
1899,	7	1,680 63	+196 03	....
1900,	7	1,557 42	—123 21	....
1901,	7	1,722 80	+165 38	+210 13
AGRICULTURAL IMPLEMENTS.				
1896,	12	1,738 62	....	....
1897,	12	1,841 49	+102 87	....
1898,	12	1,895 00	+53 51	....
1899,	12	1,997 39	+102 39	....
1900,	12	2,001 46	+4 07	....
1901,	12	2,141 37	+139 91	+402 75
STEAM PUMPS.				
1896,	2	2,183 31	....	....
1897,	2	1,782 06	—401 25	....
1898,	2	2,076 23	+294 17	....
1899,	2	1,829 84	—246 39	....
1900,	2	2,406 76	+576 92	....
1901,	2	1,781 25	—625 51	—402 06
BICYCLES.				
1896,	3	2,729 23	....	....
1897,	3	2,532 31	—196 92	... .
1898,	3	1,942 79	—589 52	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BICYCLES—Continued.				
1899,	3	$1,763 87	—$178 92	$
1900,	3	1,474 09	—289 78	....
1901,	3	2,033 17	+559 08	—696 06
PIANOS AND ORGANS.				
1896,	2	1,179 09	....	....
1897,	2	1,241 54	+62 45	....
1898,	2	1,441 80	+200 26	....
1899,	2	1,701 70	+259 90	....
1900,	2	1,408 36	—293 34	....
1901,	2	1,318 35	—90 01	+139 26
TINWARE.				
1896,	5	1,679 57	....	....
1897,	5	1,698 18	+18 61	....
1898,	5	1,687 77	—10 41	....
1899,	5	1,983 55	+295 78	....
1900,	5	1,691 32	—292 23	....
1901,	5	1,386 64	—304 93	—292 93
PAPER MANUFACTORIES.				
1896,	8	2,216 30	....	....
1897,	8	2,245 85	+29 55	....
1898,	8	2,235 71	—10 14	....
1899,	8	2,530 74	+295 03	....
1900,	8	2,684 62	+153 88	....
1901,	8	2,647 82	—36 80	+431 52

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WALL PAPER.				
1896,	4	$2,333 73	$	$
1897,	4	2,593 18	+259 45	....
1898,	4	2,871 61	+278 43	....
1899,	4	3,130 15	+258 54	....
1900,	4	3,209 41	+79 26	....
1901,	4	2,820 39	—389 02	+486 66
CIGARS.				
1896,	46	1,088 40	....	....
1897,	46	1,109 50	+21 10	....
1898,	46	1,136 72	+27 22	....
1899,	46	1,164 72	+28 00	....
1900,	46	1,195 51	+30 79	....
1901,	46	1,166 80	—28 71	+78 40
BOOK BINDING.				
1896,	3	1,216 35	....	....
1897,	3	1,185 20	—31 15	....
1898,	3	1,157 48	—27 72	....
1899,	3	1,184 81	+27 33	....
1900,	3	1,156 70	—28 11	....
1901,	3	1,258 71	+102 01	+42 36
CORDAGE ROPE AND TWINE.				
1896,	5	2,324 81	....	....
1897,	5	2,224 31	—100 50	....
1898,	5	2,366 24	+141 93	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CORDAGE, ROPE AND TWINE—Continued.				
1899,	5	$2,838 46	+$472 22	$
1900,	5	3,068 67	+230 21	....
1901,	5	3,246 03	+177 36	+921 22
PAPER, PAPER BOXES, ENVELOPES, ETC.				
1896,	27	1,100 68	....	....
1897,	27	1,072 25	—28 43	....
1898,	27	923 21	—149 04	....
1899,	27	1,074 63	+151 42	....
1900,	27	1,125 74	+51 11	....
1901,	27	1,166 29	+40 55	+65 61
POTTERY.				
1896,	2	1,415 97	....	....
1897,	2	1,325 29	—90 68	....
1898,	2	1,479 25	+153 96	....
1899,	2	1,507 74	+28 49	....
1900,	2	1,349 54	—158 20	....
1901,	2	1,439 00	+89 46	+23 03
PAVING BRICK.				
1896,	7	762 19	....	....
1897,	7	811 70	+49 51	....
1898,	7	821 91	+10 21	....
1899,	7	788 38	—33 53	....
1900,	7	1,029 48	+241 10	....
1901,	7	746 49	—282 99	—15 70

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BUILDING BRICK.				
1896,	35	$809 53	$	$
1897,	35	833 99	+24 46	....
1898,	35	783 29	—50 70	....
1899,	35	884 97	+101 68	....
1900,	35	862 76	—22 21	....
1901,	35	881 39	+18 63	+71 86
FIRE BRICK.				
1896,	18	877 90	....	....
1897,	18	814 35	—63 55	....
1898,	18	823 12	+8 77	....
1899,	18	843 70	+20 58	....
1900,	18	931 33	+87 63	....
1901,	18	850 71	—80 62	—27 19
SLATE ROOFING, ETC., TONNAGE.				
1896,	6	470 33	....	....
1897,	6	621 59	+151 26	....
1898,	6	705 64	+84 05	....
1899,	6	703 48	—2 16	....
1900,	6	681 17	—22 31	....
1901,	6	803 75	+122 58	+333 42
SLATE ROOFING, ETC., SQUARES.				
1896,	14	470 79	....	....
1897,	14	536 52	+65 73	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SLATE ROOFING, ETC., SQUARES—Continued.				
1898,	14	$403 72	—$132 80	$
1899,	14	599 62	+195 90	....
1900,	14	569 70	—29 92	....
1901,	14	612 95	+43 25	+142 16
WINDOW GLASS, BOTTLES AND TABLE GOODS.				
1896,	22	842 63	....	....
1897,	22	935 92	+93 29	....
1898,	22	997 18	+61 26	....
1899,	22	1,068 58	+71 40	....
1900,	22	1,017 82	—50 76	....
1901,	22	989 05	—28 77	+146 42
GLAZED AND CHROME KID.				
1896,	7	2,954 00	....	....
1897,	7	3,271 67	+317 67	....
1898,	7	3,338 87	+67 20	....
1899,	7	3,554 29	+215 42	....
1900,	7	3,392 54	+161 75	....
1901,	7	4,048 71	+656 17	+1,094 71
MEN'S, WOMEN'S, MISSES AND CHILDREN'S SHOES.				
1896,	15	1,486 56	....	....
1897,	15	1,502 42	+15 86	....
1898,	15	1,523 90	+21 48	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
MEN'S, WOMEN'S, MISSES' AND CHILDREN'S SHOES—Continued.				
1899,	15	$1,660 28	+$136 38	$
1900,	15	1,648 01	—12 27	....
1901,	15	1,638 37	—9 64	+151 81
SUSPENDERS.				
1896,	2	2,900 91	....	....
1897,	2	2,909 17	+8 26	....
1898,	2	3,082 68	+173 51	....
1899,	2	2,983 02	—99 66	....
1900,	2	2,943 40	—39 62	....
1901,	2	3,540 40	+597 00	+639 49
HATS AND CAPS.				
1896,	3	1,285 10	....	....
1897,	3	1,599 30	+314 20	....
1898,	3	1,316 34	—282 96	....
1899,	3	1,248 02	—68 32	....
1900,	3	1,468 92	+220 90	....
1901,	3	1,514 69	+45 77	+229 59
FUR AND FELT HATS.				
1896,	4	1,503 45	....	....
1897,	4	1,487 22	—16 23	....
1898,	4	1,377 16	—110 06	....
1899,	4	1,431 11	+53 95	....
1900,	4	1,478 90	+47 79	....
1901,	4	1,434 34	—44 56	—69 11

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WOOL HATS.				
1896,	7	$1,321 43	$	$
1897,	7	1,452 04	+130 61	....
1898,	7	1,326 88	—125 16	....
1899,	7	1,389 55	+62 67	....
1900,	7	1,653 70	+264 15	....
1901,	7	1,465 08	—188 62	+143 65
UMBRELLAS AND PARASOLS.				
1896,	4	1,884 53	....	....
1897,	4	2,062 10	+177 57	....
1898,	4	2,289 85	+227 75	....
1899,	4	2,318 43	+28 58	....
1900,	4	2,241 55	—76 88	....
1901,	4	2,382 46	+140 91	+497 93
DRESS TRIMMINGS, BRAIDS, ETC.				
1896,	8	1,103 71	....	....
1897,	8	1,056 49	—47 22	....
1898,	8	1,107 11	+50 62	....
1899,	8	1,184 88	+77 77	....
1900,	8	1,258 42	+73 54	....
1901,	8	1,218 89	—39 53	+115 18
SHIRTS AND SHIRT WAISTS.				
1896,	9	1,166 85	....	....
1897,	9	1,074 09	—92 76	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SHIRTS AND SHIRT WAISTS—Continued.				
1898,	9	$1,097 33	+$23 24	$
1899,	9	1,162 78	+65 45	....
1900,	9	1,201 32	+38 54	....
1901,	9	1,193 32	—8 00	+26 47
NECKWEAR.				
1896,	3	2,009 18	....	....
1897,	3	2,033 83	+24 65	....
1898,	3	2,052 95	+19 12	....
1899,	3	2,244 72	+191 77	....
1900,	3	2,192 02	—52 70	....
1901,	3	1,987 31	—204 71	—21 87
COTTON AND WOOLEN CLOTHS.				
1896,	24	1,219 85	....	....
1897,	24	1,347 78	+127 93	....
1898,	24	1,374 30	+26 52	....
1899,	24	1,591 44	+217 14	....
1900,	24	1,429 75	—161 69	....
1901,	24	1,483 83	+54 08	+263 98
CARPETS.				
1896,	17	1,605 29	....	....
1897,	17	1,680 61	+75 32	....
1898,	17	1,752 03	+71 42	....
1899,	17	2,096 25	+344 22	....
1900,	17	2,072 54	—23 71	....
1901,	17	2,339 66	+267 12	+734 37

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
COTTON GOODS.				
1896,	16	$955 08	$	$
1897,	16	1,046 31	+91 23	....
1898,	16	1,032 31	—14 00	....
1899,	16	1,072 61	+40 30	....
1900,	16	1,155 68	+83 07	....
1901,	16	1,183 27	+27 59	+228 19
WOOLEN AND WORSTED CASSIMERES.				
1896,	11	1,435 00	....	....
1897,	11	1,665 95	+230 95	....
1898,	11	1,646 55	—19 40	....
1899,	11	1,840 41	+193 86	....
1900,	11	1,775 39	—65 02	....
1901,	11	1,955 82	+180 43	+520 82
WOOLEN AND WORSTED FABRICS.				
1896,	16	1,373 28	....	....
1897,	16	1,578 99	+205 71	....
1898,	16	1,730 17	+151 18	....
1899,	16	1,781 54	+51 37	....
1900,	16	1,797 94	+16 40	....
1901,	16	1,888 44	+90 50	+515 16
WOOLEN AND WORSTED YARNS.				
1896,	12	1,319 04	....	....
1897,	12	2,031 21	+712 17	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WOOLEN AND WORSTED YARNS—Continued.				
1898,	12	$2,643 55	+$612 34	$
1899,	12	3,556 40	+912 85	....
1900,	12	2,583 76	—972 64	....
1901,	12	2,706 35	+122 59	+1,387 31
RUGS, YARNS, ETC.				
1896,	5	1,304 16	....	....
1897,	5	1,313 75	+9 59	....
1898,	5	1,343 70	+29 95	....
1899,	5	1,465 29	+121 59	....
1900,	5	1,436 12	—29 17	....
1901,	5	1,321 70	—114 42	+17 54
CARPET YARNS.				
1896,	11	2,155 92	....	....
1897,	11	2,798 48	+642 56	....
1898,	11	2,412 92	—385 56	....
1899,	11	2,778 50	+365 58	....
1900,	11	2,593 20	—185 30	....
1901,	11	2,612 19	+18 99	+456 27
COTTON YARNS.				
1896,	7	1,636 59	....	....
1897,	7	1,595 73	—40 86	....
1898,	7	1,567 23	—28 50	....
1899,	7	1,666 97	+99 74	....
1900,	7	1,803 41	+136 44	....
1901,	7	1,844 53	+41 12	+207 94

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WORSTED WOOLEN AND COTTON YARNS.				
1896,	10	$1,410 47	$	$
1897,	10	1,724 34	+313 87	....
1898,	10	1,509 30	—215 04	....
1899,	10	2,167 77	+658 47	....
1900,	10	2,002 18	—165 59	....
1901,	10	1,787 18	—215 00	+376 71
WOOLEN BLANKETS, FLANNELS, ETC.				
1896,	5	1,788 58	....	....
1897,	5	1,698 89	—89 69	....
1898,	5	1,982 50	+283 61	....
1899,	5	1,689 24	—293 26	....
1900,	5	1,874 87	+185 63	....
1901,	5	1,831 39	—43 46	+42 81
LACE GOODS.				
1896,	3	1,191 73	....	....
1897,	3	1,271 28	+79 55	....
1898,	3	1,252 26	—19 02	....
1899,	3	1,191 15	—61 11	....
1900,	3	1,069 51	—121 64	....
1901,	3	1,157 02	+87 51	—34 71
CHENILLE GOODS.				
1896,	3	824 06	....	....
1897,	3	858 46	+34 40	....

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CHENILLE GOODS—Continued.				
1898,	3	$987 11	+$128 65	$
1899,	3	1,105 86	+118 75	....
1900,	3	1,113 17	+7 31	....
1901,	3	1,163 98	+50 81	+339 92
UPHOLSTERY GOODS.				
1896,	10	1,379 96	....	....
1897,	10	1,390 97	+11 01	....
1898,	10	1,457 76	+66 79	....
1899,	10	1,542 82	+85 06	....
1900,	10	1,481 74	—61 08	....
1901,	10	1,507 19	+25 45	+127 23
KNIT GOODS, UNDERWEAR.				
1896,	13	1,276 70	....	....
1897,	13	1,298 89	+22 19	....
1898,	13	1,360 22	+61 33	....
1899,	13	1,344 95	—15 27	....
1900,	13	1,358 53	+13 58	....
1901,	13	1,325 64	—32 89	+48 94
HOSIERY.				
1896,	31	787 25	....	....
1897,	31	806 03	+18 78	....
1898,	31	824 77	+18 74	....
1899,	31	852 54	+27 77	....
1900,	31	882 24	+29 70	....
1901,	31	900 33	+18 09	+113 08

VALUE OF AVERAGE ANNUAL PRODUCT PER EMPLOYE—Continued.

COMPARISON OF VALUE OF PRODUCTION PER EMPLOYE—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average annual product per employe.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SILK—BROAD GOODS, THROWN SILK, YARNS, ETC.				
1896,	6	$1,492 56	$	$
1897,	6	1,382 17	—110 39	....
1898,	6	1,466 14	+83 97	....
1899,	6	1,928 51	+462 37	....
1900,	6	1,667 34	—261 17	....
1901,	6	1,404 57	—262 77	—87 99
SILK—BROAD GOODS AND RIBBONS.				
1896,	2	1,115 52	....	....
1897,	2	1,157 06	+41 54	....
1898,	2	1,317 70	+160 64	....
1899,	2	1,556 20	+238 50	....
1900,	2	1,590 88	+34 68	....
1901,	2	1,336 49	—254 39	+220 97
SILK—RIBBONS.				
1896,	4	1,636 01	....	....
1897,	4	1,674 56	+38 55	....
1898,	4	1,684 26	+9 70	....
1899,	4	1,612 27	—71 99	....
1900,	4	1,503 73	—108 54	....
1901,	4	1,561 65	+57 92	—74 36

VALUE OF PRODUCT.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

NOTE.—In this table the value of manufactured product by the same establishments for the year 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1896. Eighty-eight industries, representing 801 establishments, are considered.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
STEEL CASTINGS.				
1896,	7	$1,496,056	$	$
1897,	7	1,392,020	—$105,035	....
1898,	7	2,098,933	+707,913	....
1899,	7	2,857,935	+759,002	....
1900,	7	3,172,100	+314,165	....
1901,	7	2,542,494	—629,606	+1,046,438
STEEL BILLETS, SLABS, BLOOMS, ETC.				
1896,	4	7,149,210	....	....
1897,	4	10,511,198	+3,361,988	....
1898,	4	10,257,159	—254,039	....
1899,	4	18,832,437	+8,575,278	....
1900,	4	14,649,357	—4,183,080	....
1901,	4	17,992,938	+3,343,581	+10,843,728
TOOL STEEL.				
1896,	3	433,801	....	....
1897,	3	270,029	—163,772	....
1898,	3	445,065	+175,036	....
1899,	3	479,480	+34,415	....
1900,	3	436,340	—43,140	....
1901,	3	664,097	+227,757	+230,296

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WIRE ROPE.				
1896,	2	$615,004	$	$
1897,	2	596,192	—18,812	....
1898,	2	655,466	+59,274	....
1899,	2	971,118	+315,652	....
1900,	2	1,471,284	+500,166	....
1901,	2	1,693,920	+222,636	+1,078,916
WIRE GOODS.				
1896,	5	217,040	....	....
1897,	5	259,311	+42,271	....
1898,	5	323,568	+64,257	....
1899,	5	396.067	+72,499	....
1900,	5	342.677	—53,390	....
1901,	5	376,397	+33,720	+159,357
WAGON AND CARRIAGE AXLES AND SPRINGS.				
1896,	6	544,482	....	....
1897,	6	554,784	+10,302	....
1898,	6	645,805	+91,021	....
1899,	6	914,713	+268,908	....
1900,	6	737,639	—177,074	....
1901,	6	867,646	+130,007	+323,164
SCALES, ETC.				
1896,	4	233,592	....	....
1897,	4	249,765	+16,173	....
1898,	4	263,364	+13,599	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SCALES, ETC.—Continued.				
1899,	4	$346,487	+$83,123	$
1900,	4	375,036	+28,549	....
1901,	4	400,587	+25,551	+166,995
STOVES, RANGES, HEATERS, ETC.				
1896,	37	4,111,827	....	....
1897,	37	4,177,453	+65,626	....
1898,	37	4,227,360	+49,907	....
1899,	37	5,044,253	+816,893	....
1900,	37	5,360,816	+316,563	....
1901,	37	5,048,054	—312,762	+936,227
BATH BOILERS, TANKS, ETC.				
1896,	2	61,186	....	....
1897,	2	63,699	+2,513	....
1898,	2	62,102	—1,597	....
1899,	2	89,691	+27,589	....
1900,	2	82,639	—7,052	....
1901,	2	95,958	+13,319	+34,772
HARDWARE SPECIALTIES.				
1896,	14	2,382,624	....	....
1897,	14	2,686,482	+303,858	....
1898,	14	2,823,993	+137,511	....
1899,	14	3,839,960	+1,015,967	....
1900,	14	3,341,572	—498,388	....
1901,	14	3,618,381	+276,809	+1,235,757

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
EDGE TOOLS.				
1896,	12	$1,083,068	$	$
1897,	12	781,832	—301,236	....
1898,	12	1,069,190	+287,358	....
1899,	12	1,393,284	+324,094	....
1900,	12	1,618,418	+225,134	....
1901,	12	1,488,852	—129,566	+405,784
WRENCHES, PICKS, ETC.				
1896,	5	363,054	....	....
1897,	5	462,043	+98,989	....
1898,	5	494,058	+32,015	....
1899,	5	685,497	+191,439	....
1900,	5	690,584	+5,087	....
1901,	5	713,089	+22,505	+350,035
LOCOMOTIVES AND CARS BUILT AND REPAIRED.				
1896,	3	6,983,962	....	....
1897,	3	6,534,498	—449,464	....
1898,	3	8,000,396	+1,465,898	....
1899,	3	10,020,362	+2,019,966	....
1900,	3	11,203,744	+1,183,382	....
1901,	3	11,622,675	+418,931	+4,638,713
WROUGHT IRON PIPE AND TUBES.				
1896,	5	11,907,420	....	....
1897,	5	11,341,565	—565,855	....
1898,	5	14,552,862	+3,211,297	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WROUGHT IRON PIPE AND TUBES—Continued.				
1899,	5	$26,160,998	+$11,608,136	$
1900,	5	21,342,983	—4,818,015	....
1901,	5	27,381,482	+6,038,499	+15,474,062
CAST IRON PIPE.				
1896,	3	862,648	....	....
1897,	3	1,184,240	+321,592	....
1898,	3	1,260,038	+75,798	....
1899,	3	1,350,801	+90,763	....
1900,	3	1,745,213	+394,412	....
1901,	3	2,004,285	+259,072	+1,141,637
BRASS, COPPER AND BRONZE GOODS.				
1896,	19	2,218,718	....	....
1897,	19	2,001,110	—217,608	....
1898,	19	2,416,478	+415,368	....
1899,	19	3,549,845	+1,133,367	....
1900,	19	3,487,255	—62,590	....
1901,	19	4,069,549	+582,294	+1,850,831
IRON AND STEEL BRIDGES.				
1896,	7	3,429,136	....	....
1897,	7	3,115,371	—313,765	....
1898	7	3,717,213	+601,842	....
1899,	7	5,095,097	+1,377,884	....
1900,	7	8,649,413	+3,554,316	....
1901,	7	6,432,504	—2,216,909	+3,003,368

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
LOCOMOTIVES, STATIONARY ENGINES, ETC.				
1896,	9	$8,792,061	$	$
1897,	9	8,531,117	—260,944	....
1898,	9	12,862,598	+4,331,481	....
1899,	9	17,572,598	+4,710,000	....
1900,	9	24,600,085	+7,027,487	....
1901,	9	27,094,502	+2,494,417	+18,302,441
ENGINES, BOILERS, ETC.				
1896,	10	3,230,705	....	....
1897,	10	2,658,616	—572,089	....
1898,	10	3,088,737	+430,121	....
1899,	10	4,574,136	+1,485,399	....
1900,	10	5,088,689	+514,553	....
1901,	10	5,100,778	+12,089	+1,870,073
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES.				
1896,	12	4,603,466	....	....
1897,	12	4,359,164	—244,302	....
1898,	12	8,227,597	+3,868,433	....
1899,	12	18,549,857	+10,322,260	....
1900,	12	30,211,417	+11,661,560	....
1901,	12	28,678,934	—1,532,483	+24,075,468
IRON VESSELS AND ENGINES.				
1896,	3	4,991,255	....	....
1897,	3	4,588,448	—402,807	....
1898,	3	6,635,431	+2,046,983	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON VESSELS AND ENGINES—Continued.				
1899,	3	$9,165,761	+$2,530,330	$
1900,	3	12,062,974	+2,897,213	....
1901,	3	10,619,270	—1,443,704	+5,628,015
BOILERS, TANKS, STACKS, ETC.				
1896,	21	1,951,211	....	....
1897,	21	1,904,346	—46,865	....
1898,	21	2,455,255	+550,909	....
1899,	21	3,454,771	+999,516	....
1900,	21	4,085,048	+630,277	....
1901,	21	4,758,297	+673,249	+2,807,086
MACHINERY.				
1896,	21	5,397,999	....	....
1897,	21	5,451,809	+53,810	....
1898,	21	6,500,975	+1,049,166	....
1899,	21	8,730,374	+2,229,399	....
1900,	21	10,067,941	+1,337,567	....
1901,	21	10,493,408	+425,467	+5,095,409
FOUNDRIES AND MACHINE SHOPS.				
1896,	25	2,643,208	....	....
1897,	25	2,965,528	+322,320	....
1898,	25	3,571,600	+606,072	....
1899,	25	5,201,285	+1,629,685	....
1900,	25	5,867,126	+665,841	....
1901,	25	5,911,565	+44,439	+3,268,357

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
LOCOMOTIVES, STATIONARY ENGINES, ETC.				
1896,	9	$8,792,061	$	$
1897,	9	8,531,117	—260,944	....
1898,	9	12,862,598	+4,331,481	....
1899,	9	17,572,598	+4,710,000	....
1900,	9	24,600,085	+7,027,487	....
1901,	9	27,094,502	+2,494,417	+18,302,441
ENGINES, BOILERS, ETC.				
1896,	10	3,230,705	....	....
1897,	10	2,658,616	—572,089	....
1898,	10	3,088,737	+430,121	....
1899,	10	4,574,136	+1,485,399	....
1900,	10	5,088,689	+514,553	....
1901,	10	5,100,778	+12,089	+1,870,073
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES.				
1896,	12	4,603,466	....	....
1897,	12	4,359,164	—244,302	....
1898,	12	8,227,597	+3,868,433	....
1899,	12	18,549,857	+10,322,260	....
1900,	12	30,211,417	+11,661,560	....
1901,	12	28,678,934	—1,532,483	+24,075,468
IRON VESSELS AND ENGINES.				
1896,	3	4,991,255	....	....
1897,	3	4,588,448	—402,807	....
1898,	3	6,635,431	+2,046,983	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON VESSELS AND ENGINES—Continued.				
1899,	3	$9,165,761	+$2,530,330	$
1900,	3	12,062,974	+2,897,213	....
1901,	3	10,619,270	—1,443,704	+5,628,015
BOILERS, TANKS, STACKS, ETC.				
1896,	21	1,951,211	....	....
1897,	21	1,904,346	—46,865	....
1898,	21	2,455,255	+550,909	....
1899,	21	3,454,771	+999,516	....
1900,	21	4,085,048	+630,277	....
1901,	21	4,758,297	+673,249	+2,807,086
MACHINERY.				
1896,	21	5,397,999	....	....
1897,	21	5,451,809	+53,810	....
1898,	21	6,500,975	+1,049,166	....
1899,	21	8,730,374	+2,229,399	....
1900,	21	10,067,941	+1,337,567	....
1901,	21	10,493,408	+425,467	+5,095,409
FOUNDRIES AND MACHINE SHOPS.				
1896,	25	2,643,208	....	....
1897,	25	2,965,528	+322,320	....
1898,	25	3,571,600	+606,072	....
1899,	25	5,201,285	+1,629,685	....
1900,	25	5,867,126	+665,841	....
1901,	25	5,911,565	+44,439	+3,268,357

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
FILES, ETC.				
1896,	2	$321,222	$	$
1897,	2	329,533	+8,311	....
1898,	2	400,465	+70,932	....
1899,	2	456,967	+56,502	....
1900,	2	477,377	+20,410	....
1901,	2	589,335	+111,958	+268,113
SAWS.				
1896,	3	88,186	....	....
1897,	3	71,437	—16,749	....
1898,	3	76,338	+4,901	....
1899,	3	83,624	+7,286	....
1900,	3	132,105	+48,481	....
1901,	3	128,426	—3,679	+40,240
PLUMBER SUPPLIES.				
1896.	3	1,078,000	....	....
1897,	3	962,000	—116,000	....
1898,	3	1,097,058	+135,058	....
1899,	3	1,436,661	+339,603	....
1900,	3	1,301,478	—135,183	....
1901,	3	1,431,561	+130,083	+353,561
ELECTRICAL SUPPLIES.				
1896,	4	3,653,461	....	....
1897,	4	3,463,804	—189,657	....
1898,	4	6,821,374	+3,357,570	....
1899,	4	11,462.408	+4,641,034	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
ELECTRICAL SUPPLIES—Continued.				
1900,	4	$15,447,949	+$3,985,541	$
1901,	4	16,297,597	+849,648	+12,644,136
SHOVELS, SPADES, SCOOPS, ETC.				
1896,	8	813,573	....	....
1897,	8	803,048	—10,525	....
1898,	8	997,314	+194,266	....
1899,	8	1,493,946	+496,632	....
1900,	8	1,134,772	—359,174	....
1901,	8	1,612,469	+477,697	+798,896
SAFES AND VAULT DOORS.				
1896,	2	151,546	....	....
1897,	2	157,476	+5,930	....
1898,	2	153,085	—4,391	....
1899,	2	156,773	+3,688	....
1900,	2	508,936	+352,163	....
1901,	2	333,538	—175,398	+181,992
METAL AND METALLIC GOODS.				
1896,	3	161,989	....	....
1897,	3	184,101	+22,112	....
1898,	3	207,496	+23,395	....
1899,	3	300,978	+93,482	....
1900,	3	334,973	+33,995	....
1901,	3	344,926	+9,953	+182,937

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BUILDING AND STRUCTURAL IRON WORK.				
1896,	2	$1,195,156	$	$
1897,	2	1,249,288	+54,132	....
1898,	2	2,057,639	+808,351	....
1899,	2	2,157,573	+99,934	....
1900,	2	4,572,828	+2,415,255	....
1901,	2	6,403,461	+1,830,633	+5,208,305
IRON CHAINS.				
1896,	5	331,059	....	....
1897,	5	336,049	+4,990	....
1898,	5	409,304	+73,255	....
1899,	5	584,109	+174,805	....
1900,	5	508,450	—75,659	....
1901,	5	561,193	+52,743	+230,134
IRON FENCES AND RAILINGS.				
1896,	7	119,501	....	....
1897,	7	145,641	+26,140	....
1898,	7	187,059	+41,418	....
1899,	7	260,498	+73,439	....
1900,	7	306,812	+46,314	....
1901,	7	379,015	+72,203	+259,514
AGRICULTURAL IMPLEMENTS.				
1896,	12	2,251,507	....	....
1897,	12	2,434,451	+182,944	....
1898,	12	2,840,608	+406,157	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
AGRICULTURAL IMPLEMENTS —Continued.				
1899,	12	$3,185,835	+$345,227	$
1900,	12	3,176,317	—9,518	....
1901,	12	3,413,376	+237,059	+1,161,869
STEAM PUMPS.				
1896,	2	334,056	....	....
1897,	2	249,488	—84,568	....
1898,	2	313,511	+64,023	....
1899,	2	411,714	+98,203	....
1900,	2	645,011	+233,297	....
1901,	2	411,468	—233,543	+77,412
BICYCLES.				
1896,	3	606,001	....	....
1897,	3	645,714	+39,713	....
1898,	3	683,862	+38,148	....
1899,	3	523,870	—159,992	....
1900,	3	377,368	—146,502	....
1901,	3	197,218	—180,150	—408,783
PIANOS AND ORGANS.				
1896,	2	94,327	....	....
1897,	2	95,599	+1,272	....
1898,	2	136,971	+41,372	....
1899,	2	178,679	+41,708	....
1900,	2	205,621	+26,942	....
1901,	2	197,752	—7,869	+103,425

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
TINWARE.				
1896,	5	$477,000	$	$
1897,	5	467,000	—10,000	....
1898,	5	469,200	+2,200	....
1899,	5	545,475	+76,275	....
1900,	5	554,813	+9,338	....
1901,	5	639,243	+84,430	+162,243
PAPER MANUFACTORIES.				
1896,	8	3,370,998	....	....
1897,	8	3,310,376	—60,622	....
1898,	8	3,315,552	+5,176	....
1899,	8	4,254,182	+938,630	....
1900,	8	4,671,243	+417,061	....
1901,	8	4,567,498	—103,745	+1,196,500
WALL PAPER.				
1896,	4	844,811	....	....
1897,	4	988,000	+143,189	....
1898,	4	1,154,386	+166,386	....
1899,	4	1,255,190	+100,804	....
1900,	4	1,120,084	—135,106	....
1901,	4	1,046,365	—73,719	+201,554
CIGARS.				
1896,	46	7,138,707	....	....
1897,	46	8,100,451	+961,644	....
1898,	46	8,866,424	+765,973	....
1899,	46	9,676,533	+810,109	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CIGARS—Continued.				
1900,	46	$10,362,696	+$686,163	$
1901,	46	10,344,882	—17,814	+3,206,175
BOOK BINDING.				
1896,	3	167,856	....	....
1897,	3	162,373	—5,483	....
1898,	3	180,567	+18,194	....
1899,	3	208,527	+27,960	....
1900,	3	217,460	+8,933	....
1901,	3	236,637	+19,177	+68,781
CORDAGE, ROPE AND TWINE.				
1896,	5	4,777,490	....	....
1897,	5	4,713,313	—64,177	....
1898,	5	4,947,813	+234,500	....
1899,	5	6,219,058	+1,271,245	....
1900,	5	6,922,914	+703,856	....
1901,	5	7,446,401	+523,487	+2,668,911
PAPER, PAPER BOXES, ENVELOPES, ETC.				
1896,	27	2,009,846	....	....
1897,	27	2,049,073	+39,227	....
1898,	27	2,282,183	+233,110	....
1899,	27	2,473,800	+191,617	....
1900,	27	2,523,904	+50,104	....
1901,	27	2,493,536	—30,368	+483,690

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
POTTERY.				
1896,	2	$206,732	$	$
1897,	2	192,167	—14,565	....
1898,	2	226,326	+34,159	....
1899,	2	244,254	+17,928	....
1900,	2	232,121	—12,133	....
1901,	2	246,060	+13,939	+39,328
PAVING BRICK.				
1896,	7	333,078	....	....
1897,	7	348,220	+15,142	....
1898,	7	367,395	+19,175	....
1899,	7	416,263	+48,868	....
1900,	7	604,307	+188,044	....
1901,	7	412,809	—191,498	+79,731
BUILDING BRICK.				
1896,	35	1,569,682	....	....
1897,	35	1,544,553	—25,129	....
1898,	35	1,492,161	—52,392	....
1899,	35	1,676,130	+183,969	....
1900,	35	1,609,052	—67,078	....
1901,	35	1,722,242	+113,190	+152,560
FIRE BRICK.				
1896,	18	1,639,926	....	....
1897,	18	1,570,074	—69,852	....
1898,	18	1,915,392	+345,318	....
1899,	18	2,486,398	+571,006	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
FIRE BRICK—Continued.				
1900,	18	$3,560,462	+$1,074,064	$
1901,	18	3,221,632	—338,830	+1,581,706
SLATE ROOFING, ETC., TONNAGE.				
1896,	6	390,376	....	....
1897,	6	515,919	+125,543	....
1898,	6	537,702	+21,783	....
1899,	6	467,112	—70,590	....
1900,	6	520,415	+53,303	....
1901,	6	729,002	+208,587	+338,626
SLATE ROOFING, ETC., SQUARES.				
1896,	14	590,366	....	....
1987,	14	726,445	+136,079	....
1898,	14	756,997	+30,552	....
1899,	14	930,606	+173,609	....
1900,	14	888,733	—41,867	....
1901,	14	967,230	+78,497	+376,864
WINDOW GLASS, BOTTLES AND TABLE GOODS.				
1896,	22	5,991,102	....	....
1897,	22	6,692,767	+701,665	....
1898,	22	7,713,185	+1,020,418	....
1899,	22	9,295,604	+1,582,419	....
1900,	22	10,120,232	+824,628	....
1901,	22	8,723,430	—1,396,802	+2,732,328

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
GLAZED AND CHROME KID.				
1896,	7	$8,049,657	$	$
1897,	7	10,649,292	+2,599,635	....
1898,	7	12,691,322	+2,042,030	....
1899,	7	16,342,644	+3,651,322	....
1900,	7	15,059,504	—1,283,140	....
1901,	7	19,364,997	+4,305,493	+11,315,340
MEN'S, WOMEN'S, MISSES AND CHILDREN'S SHOES.				
1896,	15	5,055,796	....	....
1897,	15	5,279,502	+223,706	....
1898,	15	5,620,155	+340,653	....
1899,	15	5,791,046	+170,891	....
1900,	15	5,713,651	—77,395	....
1901,	15	5,773,618	+59,967	+717,822
SUSPENDERS.				
1896,	2	319,100	....	....
1897,	2	349,100	+30,000	....
1898,	2	391,500	+42,400	....
1899,	2	483,250	+91,750	....
1900,	2	624,000	+140,750	....
1901,	2	701,000	+77,000	+381,900
HATS AND CAPS.				
1896,	3	525,607	....	....
1897,	3	782,060	+256,453	....
1898,	3	737,149	—44,911	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
HATS AND CAPS—Continued.				
1899,	3	$698,891	—$38,258	$
1900,	3	901,917	+203,026	....
1901,	3	1,046,651	+144,734	+521,044
FUR AND FELT HATS.				
1896,	4	1,447,818	....	....
1897,	4	1,558,607	+110,789	....
1898,	4	1,731,063	+172,456	....
1899,	4	2,020,731	+289,668	....
1900,	4	2,494,914	+474,183	....
1901,	4	2,954,738	+459,824	+1,506,920
WOOL HATS.				
1896,	7	521,966	....	....
1897,	7	649,061	+127,095	....
1898,	7	636,904	—12,157	....
1899,	7	746,186	+109,282	....
1900,	7	931,034	+184,848	....
1901,	7	788,215	—142,819	+266,249
UMBRELLAS AND PARASOLS.				
1896,	4	1,109,989	....	....
1897,	4	1,185,705	+75,716	....
1898,	4	1,156,372	—29,333	....
1899,	4	1,231,088	+74,716	....
1900,	4	1,134,223	—96,865	....
1901,	4	1,243,643	+109,420	+133,654

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
DRESS TRIMMINGS, BRAIDS, ETC.				
1896,	8	$1,218,500	$	$
1897,	8	1,471,696	+253,196	....
1898,	8	1,708,275	+236,579	....
1899,	8	2,085,395	+377,120	....
1900,	8	2,195,940	+110,545	....
1901,	8	2,034,319	—161,621	+815,819
SHIRTS AND SHIRT WAISTS.				
1896,	9	2,105,007	....	....
1897,	9	1,953,771	—151,236	....
1898,	9	2,186,983	+233,212	....
1899,	9	2,667,418	+480,435	....
1900,	9	2,808,677	+141,259	....
1901,	9	2,886,635	+77,958	+781,628
NECKWEAR.				
1896,	3	381,745	....	....
1897,	3	353,886	—27,859	....
1898,	3	375,689	+21,803	....
1899,	3	437,720	+62,041	....
1900,	3	414,292	—23,428	....
1901,	3	359,704	—54,588	—22,041
COTTON AND WOOLEN CLOTHS.				
1896,	24	5,444,181	....	....
1897,	24	6,407,337	+963,156	....
1898,	24	6,466,073	+58,736	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
COTTON AND WOOLEN CLOTHS —Continued.				
1899,	24	$8,264,359	+$1,798,286	$
1900,	24	8,183,908	—80,451	....
1901,	24	7,925,125	—258,783	+2,480,944
CARPETS.				
1896,	17	3,632,760	....	....
1897,	17	4,544,385	+911,625	....
1898,	17	4,823,328	+278,943	....
1899,	17	5,940,777	+1,117,449	....
1900,	17	5,790,677	—150,100	....
1901,	17	6,553,397	+762,720	+2,920,637
COTTON GOODS.				
1896,	16	2,680,912	....	....
1897,	16	2,998,724	+317,812	....
1898,	16	3,104,170	+105,446	....
1899,	16	3,533,249	+429,079	....
1900,	16	3,724,764	+191,515	....
1901,	16	3,682,324	—42,440	+1,001,412
WOOLEN AND WORSTED CASSIMERES.				
1896,	11	1,970,251	....	....
1897,	11	2,618,868	+648,617	....
1898,	11	2,799,134	+180,266	....
1899,	11	3,548,303	+749,169	....
1900,	11	3,421,168	—127,135	....
1901,	11	3,854,917	+433,749	+1,884,666

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WOOLEN AND WORSTED FABRICS.				
1896,	16	$3,821,846	$	$
1897,	16	5,221,713	+1,399,867	....
1898,	16	5,320,285	+98,572	....
1899,	16	6,082,189	+761,904	....
1900,	16	7,042,519	+960,330	....
1901,	16	6,220,518	+822,001	+2,398,672
WOOLEN AND WORSTED YARNS.				
1896,	12	2,012,851	....	....
1897,	12	3,111,819	+1,098,968	....
1898,	12	3,819,936	+708,117	....
1899,	12	5,256,352	+1,436,416	....
1900,	12	4,239,957	—1,016,395	....
1901,	12	4,487,135	+247,178	+2,474,284
RUGS, YARNS, ETC.				
1896,	5	4,087,237	....	....
1897,	5	4,031,915	—55,322	....
1898,	5	3,931,652	—100,263	....
1899,	5	4,504,288	+572,636	....
1900,	5	4,552,504	+48,216	....
1901,	5	4,241,326	—311,178	+154,089
CARPET YARNS.				
1986,	11	1,213,783	....	....
1897,	11	1,749,051	+535,268	....
1898,	11	1,302,256	—446,795	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CARPET YARNS—Continued.				
1899,	11	$1,758,794	+$456,538	$
1900,	11	1,737,441	—21,353	....
1901,	11	1,797,185	+59,744	+583,402
COTTON YARNS.				
1896,	7	1,137,430	....	....
1897,	7	1,147,331	+9,901	....
1898,	7	1,245,952	+98,621	....
1899,	7	1,333,579	+87,627	....
1900,	7	1,568,971	+235,392	....
1901,	7	1,328,065	—240,906	+190,635
WORSTED, WOOLEN AND COTTON YARNS.				
1896,	10	2,304,716	....	....
1897,	10	3,233,134	+928,418	....
1898,	10	2,890,304	—342,830	....
1899,	10	4,127,434	+1,237,130	....
1900,	10	4,424,815	+297,381	....
1901,	10	4,069,413	—355,402	+1,764,697
WOOLEN BLANKETS, FLANNELS, ETC.				
1896,	5	1,282,412	....	....
1897,	5	1,221,499	—60,913	....
1898,	5	2,107,398	+885,899	....
1899,	5	1,633,499	—473,899	....
1900,	5	1,676,132	+42,633	....
1901,	5	1,670,231	—5,901	+387,819

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
LACE GOODS.				
1896,	3	$909,289	$	$
1897,	3	1,086,945	+177,656	....
1898,	3	1,219,698	+132,753	....
1899,	3	1,307,879	+88,181	....
1900,	3	1,337,964	+30,085	....
1901,	3	1,432,392	+94,428	+523,103
CHENILLE GOODS.				
1896,	3	502,678	....	....
1897,	3	573,450	+70,772	....
1898,	3	591,280	+17,830	....
1899,	3	664,622	+73,342	....
1900,	3	728,013	+63,391	....
1901,	3	791,504	+63,491	+288,826
UPHOLSTERY GOODS.				
1896,	10	2,674,368	....	....
1897,	10	2,864,002	+189,634	....
1898,	10	3,100,667	+236,665	....
1899,	10	3,514,614	+413,947	....
1900,	10	3,153,140	—361,474	....
1901,	10	3,339,940	+186,800	+665,572
KNIT GOODS, UNDERWEAR.				
1896,	13	2,978,552	....	....
1897,	13	3,338,148	+359,596	....
1898,	13	3,493,036	+154,888	....
1899,	13	3,851,935	+358,899	....

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896
KNIT GOODS, UNDERWEAR—Continued.				
1900,	13	$4,330,995	+$479,060	$
1901,	13	3,950,409	—380,586	+971,857
HOSIERY.				
1896,	31	3,744,935	....	....
1897,	31	4,518,589	+773,654	....
1898,	31	4,880,155	+361,566	....
1899,	31	5,239,702	+359,547	....
1900,	31	5,816,615	+576,913	....
1901,	31	6,082,610	+265,995	+2,337,675
SILK—BROAD GOODS, THROWN SILK, YARNS, ETC.				
1896,	6	3,423,925	....	....
1897,	6	4,808,583	+1,384,658	....
1898,	6	5,555,201	+746,618	....
1899,	6	6,944,577	+1,389,376	....
1900,	6	6,319,225	—625,352	....
1901,	6	5,664,636	—654,589	+2,240,711
SILK—BROAD GOODS AND RIBBONS.				
1896,	2	1,450,181	....	....
1897,	2	2,371,966	+921,785	....
1898,	2	2,898,933	+526,967	....
1899,	2	3,112,400	+213,467	....
1900,	2	2,784,047	—328,353	....
1901,	2	3,207,575	+423,528	+1,757,394

VALUE OF PRODUCT—Continued.

COMPARISON OF VALUE OF MANUFACTURED PRODUCT—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SILK—RIBBONS.				
1896,	4	$705,120	$	$
1897,	4	895,892	+190,772	....
1898,	4	1,067,823	+171,931	....
1899,	4	1,038,299	—29,524	....
1900,	4	1,094,713	+56,414	....
1901,	4	1,419,536	+324,823	+714,416

AVERAGE YEARLY EARNINGS.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

NOTE.—In this table the average yearly earnings by the same establishments for the years 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1896. Eighty-eight industries, representing 801 establishments, are considered.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
STEEL CASTINGS.				
1896,	7	$455 72	$	$
1897,	7	447 85	—7 87	......
1898,	7	454 28	+6 43	......
1899,	7	491 89	+37 61	......
1900,	7	471 86	—20 03	......
1901,	7	497 01	+25 15	+41 29
STEEL BILLETS, SLABS, BLOOMS, ETC.				
1896,	4	446 83	......	......
1897,	4	493 33	+46 50	......
1898,	4	591 97	+98 64	......
1899,	4	688 03	+96 06	......
1900,	4	646 80	—41 23	......
1901,	4	768 14	+121 34	+321 31
TOOL STEEL.				
1896,	3	554 04	......	......
1897,	3	467 42	—86 62	......
1898,	3	716 37	+248 95	......
1899,	3	674 38	—41 99	......
1900,	3	746 98	+72 60	......
1901,	3	789 40	+42 42	+235 36

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON AND STEEL FORGINGS.				
1896,	7	$478 61	$	$
1897,	7	495 18	+16 57	....
1898,	7	552 82	+57 64	......
1899,	7	630 65	+77 83	......
1900,	7	685 60	+54 95	......
1901,	7	529 41	—156 19	+50 80
IRON SPECIALTIES.				
1896,	2	478 38	......	......
1897,	2	504 44	+26 06	......
1898,	2	534 29	+29 85	......
1899,	2	591 94	+57 65	......
1900,	2	484 52	—107 42	......
1901,	2	478 72	—5 80	+34
MALLEABLE IRON.				
1896,	4	450 75	......	......
1897,	4	460 86	+10 11	......
1898,	4	473 67	+12 81	......
1899,	4	507 05	+33 38	......
1900,	4	518 54	+11 49	......
1901,	4	493 18	—25 36	+42 43
BOLTS, NUTS, ETC.				
1896,	8	384 27	......	......
1897,	8	318 97	—65 30	......
1898,	8	345 19	+26 22	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BOLTS, NUTS, ETC.—Continued.				
1899,	8	$376 97	+$31 78	$
1900,	8	384 20	+7 23	......
1901,	8	363 63	—20 57	—20 64
WIRE NAILS AND RIVETS.				
1896,	4	318 35	......	......
1897,	4	383 96	+65 61	......
1898,	4	279 25	—104 71	......
1899,	4	337 58	+58 33	......
1900,	4	204 30	—133 28	......
1901,	4	451 64	+247 34	+133 29
TACKS AND SMALL NAILS.				
1896,	4	289 18	......	......
1897,	4	278 53	—10 65	......
1898,	4	360 04	+81 51	......
1899,	4	344 68	—15 36	......
1900,	4	319 02	—25 66	......
1901,	4	350 11	+31 09	+60 93
WIRE.				
1896,	5	462 70	......	......
1897,	5	380 59	—82 11	......
1898,	5	489 75	+109 16	......
1899,	5	493 23	+3 48	......
1900,	5	409 71	—83 52	......
1901,	5	415 00	+5 29	—47 70

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WIRE ROPE.				
1896,	2	$443 72	$	$
1897,	2	450 67	+6 95	......
1898,	2	467 67	+17 00	......
1899,	2	488 00	+20 33	......
1900,	2	481 04	—6 96	......
1901,	2	431 76	—49 28	—11 96
WIRE GOODS.				
1896,	5	292 31	......	......
1897,	5	310 95	+18 64	......
1898,	5	277 73	—33 22	......
1899,	5	322 50	+44 77	......
1900,	5	309 27	—13 23	......
1901,	5	300 70	—8 57	+8 39
WAGON AND CARRIAGE AXLES AND SPRINGS.				
1896,	6	484 46	......	......
1897,	6	507 64	+23 18	......
1898,	6	522 37	+14 73	......
1899,	6	521 80	—57	......
1900,	6	501 81	—19 99	......
1901,	6	496 42	—5 39	+11 96
SCALES, ETC.				
1896,	4	588 94	......	......
1897,	4	567 09	—21 85	......
1898,	4	566 12	—97	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SCALES, ETC.—Continued.				
1899,	4	$604 78	+$38 66	$
1900,	4	598 03	—6 75	......
1901,	4	611 75	+13 72	+22 81
STOVES, RANGES, HEATERS, ETC.				
1896,	37	471 97	......	......
1897,	37	465 01	—6 96	......
1898,	37	483 58	+18 57	......
1899,	37	535 27	+51 69	......
1900,	37	565 89	+30 62	......
1901,	37	552 39	—13 50	+80 42
BATH BOILERS, TANKS, ETC.				
1896,	2	465 04	......	......
1897,	2	446 36	—18 68	......
1898,	2	425 34	—21 02	......
1899,	2	432 18	+6 84	......
1900,	2	442 21	+10 03	......
1901,	2	455 23	+13 02	—9 81
HARDWARE SPECIALTIES.				
1896,	14	400 42	......	......
1897,	14	398 69	—1 73	......
1898,	14	392 28	—6 41	......
1899,	14	432 09	+39 87	......
1900,	14	388 84	—43 25	......
1901,	14	430 87	+42 03	+30 45

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
EDGE TOOLS.				
1896,	12	$435 70	$	$
1897,	12	368 79	—66 91	......
1898,	12	457 51	+88 72	......
1899,	12	466 17	+8 66	......
1900,	12	471 30	+5 13	......
1901,	12	450 39	—20 91	+14 69
WRENCHES, PICKS, ETC.				
1896,	5	428 91	......	......
1897,	5	419 91	—9 00	......
1898,	5	511 49	+91 58	......
1899,	5	526 12	+14 63	......
1900,	5	478 53	—47 59	......
1901,	5	513 27	+34 74	+84 36
LOCOMOTIVES AND CARS BUILT AND REPAIRED.				
1896,	3	485 43	......	......
1897,	3	524 84	+39 41	......
1898,	3	571 93	+47 09	......
1899,	3	608 46	+36 53	......
1900,	3	607 74	—72	......
1901,	3	612 57	+4 83	+127 14
WROUGHT IRON PIPE AND TUBES.				
1896,	5	407 72	......	......
1897,	5	400 32	—7 40	......
1898,	5	430 62	+30 30	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WROUGHT IRON PIPE AND TUBES—Continued.				
1899, ...	5	$521 62	+$91 00	$
1900, ...	5	475 17	—46 45	......
1901, ...	5	502 18	+27 01	+94 46
CAST IRON PIPE.				
1896, ...	3	412 89	......	......
1897, ...	3	408 02	—4 87	......
1898, ...	3	382 51	—25 51	......
1899, ...	3	351 83	—30 68	......
1900, ...	3	448 75	+96 92	......
1901, ...	3	478 64	+29 89	+65 75
BRASS, COPPER AND BRONZE GOODS.				
1896, ...	19	410 25	......	......
1897, ...	19	407 11	—3 14	......
1898, ...	19	433 80	+26 69	......
1899, ...	19	438 92	+5 12	......
1900, ...	19	469 50	+30 58	......
1901, ...	19	480 62	+11 12	+70 37
IRON AND STEEL BRIDGES.				
1896, ...	7	504 77	......	......
1897, ...	7	479 88	—24 89	......
1898, ...	7	455 14	—24 74	......
1899, ...	7	430 21	—24 93	......
1900, ...	7	553 36	+123 15	......
1901, ...	7	566 83	+13 47	+62 06

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
LOCOMOTIVES, STATIONERY ENGINES, ETC.				
1896,	9	$561 53	$	$
1897,	9	536 69	—24 84	......
1898,	9	572 26	+35 57	......
1899,	9	586 63	+14 37	......
1900,	9	606 05	+19 42	......
1901,	9	625 27	+19 22	+63 74
ENGINES, BOILERS, ETC.				
1896,	10	522 13	......	......
1897,	10	497 57	—24 56	......
1898,	10	523 57	+26 00	......
1899,	10	548 08	+24 51	......
1900,	10	551 89	+3 81	......
1901,	10	562 88	+10 99	+40 75
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES.				
1896,	12	433 75	......	......
1897,	12	402 51	—31 24	......
1898,	12	476 52	+74 01	......
1899,	12	529 63	+53 11	......
1900,	12	533 25	+3 62	......
1901,	12	538 68	+5 43	+104 93
IRON VESSELS AND ENGINES.				
1896,	3	573 87	......	......
1897,	3	545 98	—27 89	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON VESSELS AND ENGINES—Continued.				
1898,	3	$535 08	—$10 90	$
1899,	3	554 00	+18 92	......
1900,	3	529 91	—24 09	......
1901,	3	572 32	+42 41	—1 55
BOILERS, TANKS, STACKS, ETC.				
1896,	21	467 08	......	......
1897,	21	474 32	+7 24	......
1898,	21	461 68	—12 64	......
1899,	21	479 58	+17 90	......
1900,	21	462 16	—17 42	......
1901,	21	496 49	+34 33	+29 41
MACHINERY.				
1896,	21	525 65	......	......
1897,	21	511 44	—14 21	......
1898,	21	541 79	+30 35	......
1899,	21	554 70	+12 91	......
1900,	21	539 71	—14 99	......
1901,	21	551 42	+11 71	+25 77
FOUNDRIES AND MACHINE SHOPS.				
1896,	25	450 22	......	......
1897,	25	473 93	+23 71	......
1898,	25	483 99	+10 06	......
1899,	25	505 84	+21 85	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
FOUNDRIES AND MACHINE SHOPS—Continued.				
1900,	25	$545 82	+$39 98	$
1901,	25	545 33	—49	+95 11
FILES, ETC.				
1896,	2	328 99	......	......
1897,	2	320 24	—8 75	......
1898,	2	318 57	—1 67	......
1899,	2	345 36	+26 79	......
1900,	2	333 04	—12 32	......
1901,	2	372 45	+39 41	+43 46
SAWS.				
1896,	3	459 73	......	......
1897,	3	431 14	—28 59	......
1898,	3	488 06	+56 92	......
1899,	3	512 77	+24 71	......
1900,	3	573 36	+60 59	......
1901,	3	583 70	+10 34	+123 97
PLUMBER SUPPLIES.				
1896,	3	436 32	......	......
1897,	3	409 55	—26 77	......
1898,	3	448 67	+39 12	......
1899,	3	480 71	+32 04	......
1900,	3	481 57	+86	......
1901,	3	486 09	+4 52	+49 77

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
ELECTRICAL SUPPLIES.				
1896,	4	$504 78	$	$
1897,	4	545 17	+40 39	......
1898,	4	551 56	+6 39	......
1899,	4	551 08	—48	......
1900,	4	566 40	+15 32	......
1901,	4	570 78	+4 38	+66 00
SHOVELS, SPADES, SCOOPS, ETC.				
1896,	8	399 23	......	......
1897,	8	395 43	—3 80	......
1898,	8	448 09	+52 66	......
1899,	8	518 60	+70 51	......
1900,	8	434 04	—84 56	......
1901,	8	488 42	+54 38	+89 19
SAFES AND VAULT DOORS.				
1896,	2	426 22	......	......
1897,	2	479 25	+53 03	......
1898,	2	504 23	+24 98	......
1899,	2	499 71	—4 52	......
1900,	2	442 19	—57 52	......
1901,	2	454 60	+12 41	+28 38
METAL AND METALLIC GOODS.				
1896,	3	303 56	......	......
1897,	3	317 41	+13 85	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
METAL AND METALLIC GOODS—Continued.				
1898,	3	$329 26	+$11 85	$
1899,	3	397 20	+67 94	......
1900,	3	390 76	—6 44	......
1901,	3	464 93	+74 17	+161 37
BUILDING AND STRUCTURAL IRON WORK.				
1896,	2	508 18	......	......
1897,	2	520 31	+12 13	......
1898,	2	525 02	+4 71	......
1899,	2	530 60	+5 58	......
1900,	2	523 93	—6 67	......
1901,	2	524 78	+85	+16 60
IRON CHAINS.				
1896,	5	396 22	......	......
1897,	5	418 49	+22 27	......
1898,	5	447 18	+28 69	......
1899,	5	469 58	+22 40	......
1900,	5	471 75	+2 17	......
1901,	5	495 81	+24 06	+99 59
IRON FENCES AND RAILINGS.				
1896,	7	474 84	......	......
1897,	7	489 23	+14 39	......
1898,	7	453 94	—35 29	......
1899,	7	450 74	—3 20	......
1900,	7	448 24	—2 50	......
1901,	7	470 09	+21 85	—4 75

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
AGRICULTURAL IMPLEMENTS.				
1896,	12	$444 32	$	$
1897,	12	446 81	+2 49	......
1898,	12	464 79	+17 98	......
1899,	12	478 24	+13 45	......
1900,	12	479 13	+89	......
1901,	12	512 69	+33 56	+68 37
STEAM PUMPS.				
1896,	2	793 26	......	......
1897,	2	736 46	—56 80	......
1898,	2	741 93	+5 47	......
1899,	2	741 08	—85	......
1900,	2	720 73	—20 35	......
1901,	2	693 70	—27 03	—99 56
BICYCLES.				
1896,	3	527 63	......	......
1897,	3	609 59	+21 96	......
1898,	3	440 23	—169 36	......
1899,	3	428 90	—11 33	......
1900,	3	382 78	—46 12	......
1901,	3	569 78	+187 00	+42 15
PIANOS AND ORGANS.				
1896,	2	423 67	......	......
1897,	2	435 61	+11 94	......
1898,	2	482 97	+47 36	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
1899, ...	2	$458 35	—$24 62	$
1900, ...	2	433 17	—25 18	......
1901, ...	2	436 40	+3 23	+2 73
TINWARE.				
1896, ...	5	378 66	......	......
1897, ...	5	388 75	+10 09	......
1898, ...	5	370 93	—17 82	......
1899, ...	5	430 58	+59 65	......
1900, ...	5	411 90	—18 68	......
1901, ...	5	368 95	—42 95	—9 71
PAPER MANUFACTORIES.				
1896, ...	8	381 90	......	......
1897, ...	8	399 01	+17 11	......
1898, ...	8	399 06	+05	......
1899, ...	8	409 03	+10 37	......
1900, ...	8	441 85	+32 82	......
1901, ...	8	428 12	—13 73	+46 22
WALL PAPER.				
1896, ...	4	320 63	......	......
1897, ...	4	325 57	+4 94	......
1898, ...	4	346 77	+21 20	......
1899, ...	4	358 45	+11 68	......
1900, ...	4	424 44	+65 99	......
1901, ...	4	423 29	—1 15	+102 66

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
CIGARS.				
1896, ...	46	$276 47	$	$
1897, ...	46	279 98	+3 51	......
1898, ...	46	286 62	+6 64	......
1899, ...	46	291 80	+5 18	......
1900, ...	46	306 10	+14 30	......
1901, ...	46	304 40	—1 70	+27 93
BOOK BINDING.				
1896, ...	3	470 70	......	......
1897, ...	3	484 51	+13 81	......
1898, ...	3	482 65	—1 86	......
1899, ...	3	490 44	+7 79	......
1900, ...	3	524 27	+33 83	......
1901, ...	3	551 69	+27 42	+80 99
CORDAGE ROPE AND TWINE.				
1896, ...	5	301 21	......	......
1897, ...	5	322 57	+21 36	......
1898, ...	5	322 81	+24	......
1899, ...	5	361 71	+38 90	......
1900, ...	5	329 01	—32 70	......
1901, ...	5	342 54	+13 53	+41 33
PAPER, PAPER BOXES, ENVELOPES, ETC.				
1896, ...	27	270 89	......	......
1897, ...	27	267 51	—3 38	......
1898, ...	27	229 67	—37 84	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
PAPER, PAPER BOXES, ENVELOPES, ETC.—Continued.				
1899,	27	$294 62	+$64 95	$
1900,	27	269 75	—24 87	......
1901,	27	279 67	+9 92	+8 78
POTTERY.				
1896,	2	497 00	......	......
1897,	2	469 04	—27 96	......
1898,	2	482 34	+13 30	......
1899,	2	485 54	+3 20	......
1900,	2	455 27	—30 27	......
1901,	2	486 17	+30 90	—10 83
PAVING BRICK.				
1896,	7	326 54	......	......
1897,	7	335 67	+9 13	......
1898,	7	331 42	—4 25	......
1899,	7	334 91	+3 49	......
1900,	7	404 88	+69 97	......
1901,	7	374 08	—30 80	+47 54
BUILDING BRICK.				
1896,	35	341 66	......	......
1897,	35	355 21	+13 55	......
1898,	35	343 00	—12 21	......
1899,	35	365 77	+22 77	......
1900,	35	365 53	—24	......
1901,	35	375 55	+10 02	+33 89

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
FIRE BRICK.				
1896,	18	$389 26	$	$
1897,	18	373 08	—16 18	......
1898,	18	362 41	—10 67	......
1899,	18	384 59	+22 18	......
1900,	18	419 15	+34 56	......
1901,	18	428 42	+9 27	+39 16
SLATE ROOFING, ETC., TONNAGE.				
1896,	6	303 61	......	......
1897,	6	325 78	+22 17	......
1898,	6	328 38	+2 60	......
1899,	6	330 23	+1 85	......
1900,	6	366 58	+36 35	......
1901,	6	399 15	+32 57	+95 54
SLATE ROOFING, ETC., SQUARES.				
1896,	14	316 89	......	......
1897,	14	320 95	+4 06	......
1898,	14	251 97	—68 98	......
1899,	14	351 13	—84	......
1900,	14	362 58	+11 45	......
1901,	14	390 16	+27 58	+73 27
WINDOW GLASS, BOTTLES AND TABLE GOODS.				
1896,	22	378 38	......	......
1897,	22	418 31	+39 93	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
WINDOW GLASS, BOTTLES AND TABLE GOODS—Continued.				
1898,	22	$441 16	+$22 85	$
1899,	22	464 80	+23 64	......
1900,	22	459 71	—5 09	......
1901,	22	450 28	—9 43	+71 90
GLAZED AND CHROME KID.				
1896,	7	353 15	......	......
1897,	7	394 82	+41 67	......
1898,	7	393 26	—1 56	......
1899,	7	414 94	+21 68	......
1900,	7	396 28	—18 66	......
1901,	7	441 41	+45 13	+88 26
MEN'S, WOMEN'S. MISSES AND CHILDREN'S SHOES.				
1896,	15	345 17	......	......
1897,	15	355 95	+10 78	......
1898,	15	359 34	+3 39	......
1899,	15	382 98	+23 64	......
1900,	15	374 94	—8 04	......
1901,	15	382 24	+7 30	+37 07
SUSPENDERS.				
1896,	2	281 24	......	......
1897,	2	282 80	+1 56	......
1898,	2	322 83	+40 03	......
1899,	2	377 47	+54 64	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SUSPENDERS—Continued.				
1900,	2	$359 67	—$17 80	$
1901,	2	310 10	+49 57	+28 86
HATS AND CAPS.				
1896,	3	296 23	......	......
1897,	3	366 74	+70 51	......
1898,	3	314 97	—51 77	......
1899,	3	342 69	+27 72	......
1900,	3	345 15	+2 46	......
1901,	3	354 41	+9 26	+58 18
FUR AND FELT HATS.				
1896,	4	399 97	......	......
1897,	4	491 08	+91 11	......
1898,	4	473 42	—17 66	......
1899,	4	471 17	—2 25	......
1900,	4	479 23	+8 06	......
1901,	4	476 02	—3 21	+76 05
WOOL HATS.				
1896,	7	318 46	......	......
1897,	7	320 08	+1 62	......
1898,	7	293 28	—26 80	......
1899,	7	303 84	+10 56	......
1900,	7	386 29	+82 45	......
1901,	7	349 06	—37 23	+30 60

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
UMBRELLAS AND PARASOLS.				
1896,	4	$231 65	$	$
1897,	4	296 53	+54 88	......
1898,	4	268 57	—27 96	......
1899,	4	272 41	+3 84	......
1900,	4	267 00	—5 41	......
1901,	4	276 66	+9 66	+45 01
DRESS TRIMMINGS, BRAIDS, ETC.				
1896,	8	270 87	......	......
1897,	8	272 97	+2 10	......
1898,	8	267 84	—5 13	......
1899,	8	272 55	+4 71	......
1900,	8	305 73	+33 18	......
1901,	8	296 18	—9 55	+25 31
SHIRTS AND SHIRT WAISTS.				
1896,	9	292 33	......	......
1897,	9	271 95	—20 38	......
1898,	9	270 51	—1 44	......
1899,	9	299 52	+29 01	......
1900,	9	313 80	+14 28	......
1901,	9	320 15	+6 35	+27 82
NECKWEAR.				
1896,	3	383 74	......	......
1897,	3	362 00	—21 74	......
1898,	3	376 91	+14 91	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
NECKWEAR—Continued.				
1899,	3	$378 89	+$1 98	$
1900,	3	366 39	—12 50	......
1901,	3	317 06	—49 33	—66 68
COTTON AND WOOLEN CLOTHS.				
1896,	24	317 82	......	......
1897,	24	345 80	+27 98	......
1898,	24	349 94	+4 14	......
1899,	24	372 47	+22 53	......
1900,	24	348 40	—24 07	......
1901,	24	351 78	+3 38	+33 96
CARPETS.				
1896,	17	346 63	......	......
1897,	17	364 98	+18 35	......
1898,	17	362 75	—2 23	......
1899,	17	415 59	+52 84	......
1900,	17	416 14	+55	......
1901,	17	447 98	+31 84	+101 35
COTTON GOODS.				
1896,	16	282 91	......	......
1897,	16	312 65	+29 74	......
1898,	16	320 93	+8 28	......
1899,	16	335 05	+14 12	......
1900,	16	344 97	+9 92	......
1901,	16	336 00	—8 97	+53 09

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WOOLEN AND WORSTED CASSIMERES.				
1896,	11	$305 88	$	$
1897,	11	332 92	+27 04	......
1898,	11	332 52	—40	......
1899,	11	349 24	+16 72	......
1900,	11	358 77	+9 53	......
1901,	11	352 17	—6 60	+46 29
WOOLEN AND WORSTED FABRICS.				
1896,	16	283 21	......	......
1897,	16	316 01	+32 80	......
1898,	16	346 81	+30 80	......
1899,	16	356 76	+9 95	......
1900,	16	346 26	—10 50	......
1901,	16	345 63	—63	+62 42
WOOLEN AND WORSTED YARNS.				
1896,	12	269 36	......	......
1897,	12	320 70	+51 34	......
1898,	12	313 57	—7 13	......
1899,	12	361 57	+48 00	......
1900,	12	323 61	—37 96	......
1901,	12	349 14	+25 53	+79 78
RUGS, YARNS, ETC.				
1896,	5	322 64	......	......
1897,	5	320 50	—2 14	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
RUGS, YARNS, ETC.—Continued.				
1898,	5	$340 57	+$20 07	$
1899,	5	381 45	+40 88	......
1900,	5	370 22	—11 23	......
1901,	5	367 64	—2 58	+45 00
CARPET YARNS.				
1896,	11	335 80	......	......
1897,	11	373 10	+37 30	......
1898,	11	333 13	—39 97	......
1899,	11	382 96	+49 83	......
1900,	11	364 79	—18 17	......
1901,	11	386 01	+21 22	+50 21
COTTON YARNS.				
1896,	7	271 90	......	......
1897,	7	280 68	+8 78	......
1898,	7	300 77	+20 09	......
1899,	7	305 36	+4 59	......
1900,	7	301 08	—4 28	......
1901,	7	318 39	+17 31	+46 49
WORSTED WOOLEN AND COTTON YARNS.				
1896,	10	283 14	......	......
1897,	10	299 96	+16 82	......
1898,	10	282 51	—17 45	......
1899,	10	344 21	+61 70	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WORSTED, WOOLEN AND COTTON YARNS—Continued.				
1900,	10	$295 67	—$48 54	$
1901,	10	270 60	—25 07	—12 54
WOOLEN BLANKETS, FLANNELS, ETC.				
1896,	5	358 52	......	......
1897,	5	367 74	+9 22	......
1898,	5	329 54	—38 20	......
1899,	5	333 27	+3 73	......
1900,	5	362 09	+28 82	......
1901,	5	328 39	—33 70	—30 13
LACE GOODS.				
1896,	3	253 95	......	......
1897,	3	261 33	+7 38	......
1898,	3	277 11	+15 78	......
1899,	3	285 65	+8 54	......
1900,	3	297 73	+12 08	......
1901,	3	309 96	+12 23	+56 01
CHENILLE GOODS.				
1896,	3	226 95	......	......
1897,	3	253 33	+26 38	......
1898,	3	285 54	+32 21	......
1899,	3	338 77	+53 23	......
1900,	3	384 81	+46 04	......
1901,	3	398 32	+13 51	+171 37

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
UPHOLSTERY GOODS.				
1896,	10	$348 00	$	$
1897,	10	371 79	+23 79	......
1898,	10	398 38	+26 59	......
1899,	10	404 63	+6 25	......
1900,	10	395 86	—8 77	......
1901,	10	412 76	+16 90	+64 76
KNIT GOODS, UNDERWEAR.				
1896,	13	262 29	......	......
1897,	13	262 28	—01	......
1898,	13	267 35	+5 07	......
1899,	13	276 14	+8 79	......
1900,	13	254 73	—21 41	......
1901,	13	257 27	+2 54	—5 02
HOSIERY.				
1896,	31	237 59	......	......
1897,	31	245 66	+8 07	......
1898,	31	250 73	+5 07	......
1899,	31	262 05	+11 32	......
1900,	31	272 54	+10 49	......
1901,	31	277 47	+4 93	+39 88
SILK—BROAD GOODS, THROWN SILK, YARNS, ETC.				
1896,	6	252 46	......	......
1897,	6	228 95	—23 51	......

AVERAGE YEARLY EARNINGS—Continued.

COMPARISON OF AVERAGE YEARLY EARNINGS OF EMPLOYES, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average yearly earnings.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1900 as compared with 1896.
1898,	6	$239 40	+$10 45	$
1899,	6	267 49	+28 09	......
1900,	6	236 50	—30 99	......
1901,	6	219 74	—16 76	—32 72
SILK—BROAD GOODS AND RIBBONS.				
1896,	2	250 25	......	......
1897,	2	233 02	—17 23	......
1898,	2	234 57	+1 55	......
1899,	2	261 31	+26 74	......
1900,	2	265 71	+4 40	......
1901,	2	226 18	—39 53	—24 07
SILK—RIBBONS.				
1896,	4	291 88	......	......
1897,	4	350 45	+58 57	......
1898,	4	336 36	—14 09	......
1899,	4	338 22	+1 86	......
1900,	4	304 04	—34 18	......
1901,	4	345 09	+41 05	+53 21

AVERAGE DAILY WAGE.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

NOTE.—In this table the average daily wage of employes, skilled and unskilled, in the same establishments for the years 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1896. Eighty-eight industries, representing 801 establishments, are considered.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
STEEL CASTINGS.			Cts.	Cts.
1896, ...	7	$1 54	......	......
1897, ...	7	1 44	—13	......
1898, ...	7	1 46	+02	......
1899, ...	7	1 63	+17	......
1900, ...	7	1 54	—09	......
1901, ...	7	1 65	+11	+11
STEEL BILLETS, SLABS, BLOOMS, ETC.				
1896, ...	4	2 19	......	......
1897, ...	4	1 70	—49	......
1898, ...	4	2 07	+37	......
1899, ...	4	2 33	+26	......
1900, ...	4	2 63	+30	......
1901, ...	4	2 65	+02	+46
TOOL STEEL.				
1896, ...	3	2 08	......	......
1897, ...	3	1 93	—15	....
1898, ...	3	2 30	+37	......
1899, ...	3	2 32	+02	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
TOOL STEEL—Continued.			Cts.	Cts.
1900,	3	$2 56	+24	......
1901,	3	2 68	+12	+60
IRON AND STEEL FORGINGS.				
1896,	7	1 87	......	......
1897,	7	1 76	—11	......
1898,	7	1 89	+13	......
1899,	7	2 10	+21	......
1900,	7	2 35	+25	......
1901,	7	1 90	—45	+03
IRON SPECIALTIES.				
1896,	2	1 59	......	......
1897,	2	1 68	+09	......
1898,	2	1 77	+09	......
1899,	2	1 97	+20	......
1900,	2	1 61	—36	......
1901,	2	1 59	—02	......
MALLEABLE IRON.				
1896,	4	1 54	......	......
1897,	4	1 58	+04	......
1898,	4	1 59	+01	......
1899,	4	1 70	+11	......
1900,	4	1 78	+08	......
1901,	4	1 72	—06	+18

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BOLTS, NUTS, ETC.			Cts.	Cts.
1896,	8	$1 64	......	......
1897,	8	1 22	—42	......
1898,	8	1 26	+04	......
1899,	8	1 33	+07	......
1900,	8	1 32	—01	......
1901,	8	1 19	—13	—45
WIRE NAILS AND RIVETS.				
1896,	4	1 32	......	......
1897,	4	1 54	+22	......
1898,	4	1 48	—06	......
1899,	4	2 38	+90	......
1900,	4	1 76	—62	......
1901,	4	1 50	—26	+18
TACKS AND SMALL NAILS.				
1896,	4	1 28	......	......
1897,	4	1 33	+05	......
1898,	4	1 45	+12	......
1899,	4	1 23	—22	......
1900,	4	1 26	+03	......
1901,	4	1 25	—01	—03
WIRE.				
1896,	5	1 62	......	......
1897,	5	1 44	—18	......
1898,	5	1 54	+10	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WIRE—Continued.			Cts.	Cts.
1899,	5	$1 53	—01	......
1900,	5	1 36	—17	......
1901,	5	1 37	+01	—25
WIRE ROPE.				
1896,	2	1 47	......	......
1897,	2	1 49	+02	......
1898,	2	1 54	+05	......
1899,	2	1 61	+07	......
1900,	2	1 57	—04	......
1901,	2	1 40	—17	—07
WIRE GOODS.				
1896,	5	99	......	......
1897,	5	1 03	+04	......
1898,	5	92	—11	......
1899,	5	1 07	+15	......
1900,	5	1 03	—04	......
1901,	5	1 02	—01	+03
WAGON AND CARRIAGE AXLES AND SPRINGS.				
1896,	6	1 90	......	......
1897,	6	1 84	—06	......
1898,	6	1 81	—03	......
1899,	6	1 83	+02	......
1900,	6	1 80	—03	......
1901,	6	1 79	—01	—11

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SCALES, ETC.			Cts.	Cts.
1896,	4	$2 13	......	......
1897,	4	1 99	—14	......
1898,	4	1 93	—06	......
1899,	4	2 00	+07	......
1900,	4	2 01	+01	......
1901,	4	2 09	+08	—04
STOVES, RANGES, HEATERS, ETC.				
1896,	37	2 26	......	......
1897,	37	2 04	—22	......
1898,	37	2 04	......	......
1899,	37	2 11	+07	......
1900,	37	2 31	+20	......
1901,	37	2 22	—09	—04
BATH BOILERS, TANKS, ETC.				
1896,	2	1 50	......	......
1897,	2	1 46	—04	......
1898,	2	1 41	—05	......
1899,	2	1 42	+01	......
1900,	2	1 44	+02	......
1901,	2	1 50	+06	......
HARDWARE SPECIALTIES.				
1896,	14	1 54	......	......
1897,	14	1 48	—06	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
HARDWARE SPECIALTIES—Continued.			Cts.	Cts.
1898,	14	$1 53	+05	......
1899,	14	1 54	+01	......
1900,	14	1 56	+02	......
1901,	14	1 46	—10	—08
EDGE TOOLS.				
1896,	12	1 77	......	......
1897,	12	1 62	—15	......
1898,	12	1 57	—05	......
1899,	12	1 59	+02	......
1900,	12	1 59	......	......
1901,	12	1 52	—07	—25
WRENCHES, PICKS, ETC.				
1896,	5	1 79	......	......
1897,	5	1 58	—21	......
1898,	5	1 88	+30	......
1899,	5	1 80	—08	......
1900,	5	1 71	—09	......
1901,	5	1 83	+12	+04
LOCOMOTIVES AND CARS BUILT AND REPAIRED.				
1896,	3	1 78	......	......
1897,	3	1 86	+08	......
1898,	3	1 93	+07	......
1899,	3	2 00	+07	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
LOCOMOTIVES AND CARS BUILT AND REPAIRED—Continued.			Cts.	Cts.
1900,	3	$2 01	+01	......
1901,	3	2 02	+01	+24
WROUGHT IRON PIPE AND TUBES.				
1896,	5	1 44	......	......
1897,	5	1 34	—10	......
1898,	5	1 42	+08	......
1899,	5	1 94	+52	......
1900,	5	1 79	—15	......
1901,	5	1 77	—02	+33
CAST IRON PIPE.				
1896,	3	1 37	......	......
1897,	3	1 35	—02	......
1898,	3	1 29	—06	......
1899,	3	1 40	+11	......
1900,	3	1 47	+07	......
1901,	3	1 52	+05	+15
BRASS, COPPER AND BRONZE GOODS.				
1896,	19	1 39	......	......
1897,	19	1 38	—01	......
1898,	19	1 46	+08	......
1899,	19	1 45	—01	......
1900,	19	1 57	+12	......
1901,	19	1 58	+01	+19

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON AND STEEL BRIDGES.			Cts.	Cts.
1896,	7	$1 72	......	......
1897,	7	1 61	—11	......
1898,	7	1 51	—10	......
1899,	7	1 54	+03	......
1900,	7	1 84	+30	......
1901,	7	1 83	—01	+11
LOCOMOTIVES, STATIONARY ENGINES, ETC.				
1896,	9	1 84	......	......
1897,	9	1 75	—09	......
1898,	9	1 88	+13	......
1899,	9	1 91	+03	......
1900,	9	1 97	+06	......
1901,	9	2 06	+09	+22
ENGINES, BOILERS, ETC.				
1896,	10	1 77	......	......
1897,	10	1 69	—08	......
1898,	10	1 72	+03	......
1899,	10	1 82	+10	......
1900,	10	1 80	—02	......
1901,	10	1 86	+06	+09
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES.				
1896,	12	1 67	......	......
1897,	12	1 44	—23	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CAR SPRINGS, AXLES AND RAILWAY SUPPLIES—Continued.			Cts.	Cts.
1898,	12	$1 61	+17	......
1899,	12	1 71	+10	......
1900,	12	1 71	......	......
1901,	12	1 77	+06	+10
IRON VESSELS AND ENGINES.				
1896,	3	1 88	......	......
1897,	3	1 79	—09	......
1898,	3	1 76	—03	......
1899,	3	1 87	+11	......
1900,	3	1 81	—06	......
1901,	3	1 73	—08	—15
BOILERS, TANKS, STACKS, ETC.				
1896,	21	1 63	......	......
1897,	21	1 66	+03	......
1898,	21	1 59	—07	......
1899,	21	1 58	—01	......
1900,	21	1 52	—06	......
1901,	21	1 66	+14	+03
MACHINERY.				
1896,	21	1 75	......	......
1897,	21	1 66	—09	......
1898,	21	1 81	+15	......
1899,	21	1 84	+03	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
MACHINERY—Continued.			Cts.	Cts.
1900,	21	$1 79	—05	......
1901,	21	1 80	+01	+05
FOUNDRIES AND MACHINE SHOPS.				
1896,	25	1 57	......	......
1897,	25	1 61	+04	......
1898,	25	1 63	+02	......
1899,	25	1 66	+03	......
1900,	25	1 82	+16	......
1901,	25	1 80	—02	+23
FILES, ETC.				
1896,	2	1 20	......	......
1897,	2	1 20	......	......
1898,	2	1 15	—15	......
1899,	2	1 14	—01	......
1900,	2	1 14	......	......
1901,	2	1 29	+15	+09
SAWS.				
1896,	3	2 01	......	......
1897,	3	2 05	+04	......
1898,	3	2 00	—05	......
1899,	3	2 05	+05	......
1900,	3	2 04	—01	......
1901,	3	2 03	—01	+02

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
PLUMBER SUPPLIES.			Cts.	Cts.
1896,	3	$1 55	......	......
1897,	3	1 52	—03	......
1898,	3	1 55	+03	......
1899,	3	1 54	—01	......
1900,	3	1 54	......	......
1901,	3	1 46	—08	—09
ELECTRICAL SUPPLIES.				
1896,	4	1 75	......	......
1897,	4	1 84	+09	......
1898,	4	1 83	—01	......
1899,	4	1 82	—01	......
1900,	4	1 91	+09	......
1901,	4	1 90	—01	+15
SHOVELS, SPADES, SCOOPS, ETC.				
1896,	8	1 90	......	......
1897,	8	1 91	—09	......
1898,	8	1 82	+01	......
1899,	8	1 85	+03	......
1900,	8	1 72	—13	......
1901,	8	1 73	+01	—17
SAFES AND VAULT DOORS.				
1896,	2	1 39	......	......
1897,	2	1 59	+20	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SAFES AND VAULT DOORS—Continued.			Cts.	Cts.
1898,	2	$1 69	+10	......
1899,	2	1 70	+01	......
1900,	2	1 52	—18	......
1901,	2	1 50	—02	+11
METAL AND METALLIC GOODS.				
1896,	3	1 29	......	......
1897,	3	1 23	—06	......
1898,	3	1 29	+06	......
1899,	3	1 50	+21	......
1900,	3	1 42	—08	......
1901,	3	1 58	+16	+29
BUILDING AND STRUCTURAL IRON WORK.				
1896,	2	1 60	......	......
1897,	2	1 72	+12	......
1898,	2	1 71	—01	......
1899,	2	1 74	+03	......
1900,	2	1 71	—03	......
1901,	2	1 72	+01	+12
IRON CHAINS.				
1896,	5	1 50	......	......
1897,	5	1 54	+04	......
1988,	5	1 50	—04	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
IRON CHAINS—Continued.			Cts.	Cts.
1899,	5	$1 59	+09	......
1900,	5	1 87	+28	......
1901,	5	1 71	—16	+21
IRON FENCES AND RAILINGS.				
1896,	7	1 62	......	......
1897,	7	1 64	+02	......
1898,	7	1 49	—15	......
1899,	7	1 49	......	......
1900,	7	1 47	—02	......
1901,	7	1 54	+07	—08
AGRICULTURAL IMPLEMENTS.				
1896,	12	1 55	......	......
1897,	12	1 53	—02	......
1898,	12	1 55	+02	......
1899,	12	1 61	+06	......
1900,	12	1 60	—01	......
1901,	12	1 70	+10	+15
STEAM PUMPS.				
1896,	2	2 58	......	......
1897,	2	2 40	—18	......
1898,	2	2 44	+04	......
1899,	2	2 46	+02	......
1900,	2	2 39	—07	......
1901,	2	2 30	—09	—28

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BICYCLES.			Cts.	Cts.
1896,	3	$1 91	......	......
1897,	3	2 05	+14	......
1898,	3	1 63	—42	......
1899,	3	1 61	—02	......
1900,	3	1 62	+01	......
1901,	3	2 08	+46	+17
PIANOS AND ORGANS.				
1896,	2	1 56	......	......
1897,	2	1 49	—07	......
1898,	2	1 64	+15	......
1899,	2	1 56	—08	......
1900,	2	1 48	—08	......
1901,	2	1 48	......	—08
TINWARE.				
1896,	5	1 26	......	......
1897,	5	1 29	+03	......
1898,	5	1 24	—05	......
1899,	5	1 43	+19	......
1900,	5	1 37	—06	......
1901,	5	1 36	—01	+10
PAPER MANUFACTORIES.				
1896,	8	1 46	......	......
1897,	8	1 44	—02	......
1898,	8	1 41	—03	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
PAPER MANUFACTORIES—Continued.			Cts.	Cts.
1899,	8	$1 44	+03	......
1900,	8	1 49	+05	......
1901,	8	1 46	—03	......
WALL PAPER.				
1896,	4	1 24	......	......
1897,	4	1 15	—09	......
1898,	4	1 22	+07	......
1899,	4	1 27	+05	......
1900,	4	1 51	+24	......
1901,	4	1 48	—03	+24
CIGARS.				
1896,	46	96	......	......
1897,	46	96	......	......
1898,	46	98	+02	......
1899,	46	99	+01	......
1900,	46	1 04	+05	......
1901,	46	1 03	—01	+07
BOOK BINDING.				
1896,	3	1 56	......	......
1897,	3	1 73	+17	......
1898,	3	1 70	—03	......
1899,	3	1 75	+05	......
1900,	3	1 82	+07	......
1901,	3	1 90	+08	+34

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CORDAGE, ROPE AND TWINE,			Cts.	Cts.
1896,	5	$1 05	......	......
1897,	5	1 02	—03	......
1898,	5	1 03	+01	......
1899,	5	1 16	+13	......
1900,	5	1 09	—07	......
1901,	5	1 14	+05	+09
PAPER, PAPER BOXES, ENVELOPES, ETC.				
1896,	27	91	......	......
1897,	27	89	—02	......
1898,	27	76	—13	......
1899,	27	97	+21	......
1900,	27	93	—07	......
1901,	27	93	+03	+02
POTTERY.				
1896,	2	1 64	......	......
1897,	2	1 63	—01	......
1898,	2	1 66	+03	......
1899,	2	1 63	—03	......
1900,	2	1 58	—05	......
1901,	2	1 60	+02	—04
PAVING BRICK.				
1896,	7	1 28	......	......
1897,	7	1 36	+08	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
PAVING BRICK—Continued.			Cts.	Cts.
1898,	7	$1 36	—01	......
1899,	7	1 45	+10	......
1900,	7	1 50	+05	......
1901,	7	1 60	+10	+32
BUILDING BRICK.				
1896,	35	1 49	......	......
1897,	35	1 56	+07	......
1898,	35	1 57	+01	......
1899,	35	1 66	+09	......
1900,	35	1 69	+03	......
1901,	35	1 63	—06	+14
FIRE BRICK.				
1896,	18	1 37	......	......
1897,	18	1 33	—04	......
1898,	18	1 49	+16	......
1899,	18	1 55	+06	......
1900,	18	1 40	—15	......
1901,	18	1 44	+04	+07
SLATE ROOFING, ETC., TONNAGE.				
1896,	6	1 33	......	......
1897,	6	1 44	+11	......
1898,	6	1 34	—10	......
1899,	6	1 40	+06	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SLATE ROOFING, ETC., TONNAGE—Continued.			Cts.	Cts.
1900,	6	$1 44	+04	......
1901,	6	1 49	+05	+16
SLATE ROOFING, ETC., SQUARES.				
1896,	14	1 33	......	......
1897,	14	1 34	+01	......
1898,	14	1 42	+08	......
1899,	14	1 43	+01	......
1900,	14	1 48	+05	......
1901,	14	1 54	+06	+21
WINDOW GLASS, BOTTLES AND TABLE GOODS.				
1896,	22	1 58	......	......
1897,	22	1 59	+01	......
1898,	22	1 60	+01	......
1899,	22	1 64	+04	......
1900,	22	1 73	+09	......
1901,	22	1 76	+03	+18
GLAZED AND CHROME KID.				
1896,	7	1 18	......	......
1897,	7	1 31	+13	......
1898,	7	1 32	+01	......
1899,	7	1 38	+06	......
1900,	7	1 47	+09	......
1901,	7	1 48	+01	+30

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
MEN'S, WOMEN'S, MISSES' AND CHILDREN'S SHOES.			Cts.	Cts.
1896,	15	$1 23	......	......
1897,	15	1 22	—01	......
1898,	15	1 25	+03	......
1899,	15	1 29	+04	......
1900,	15	1 27	—02	......
1901,	15	1 28	+01	+05
SUSPENDERS.				
1896,	2	95	......	......
1897,	2	70	—25	......
1898,	2	1 09	+39	......
1899,	2	1 26	+17	......
1900,	2	1 21	—05	......
1901,	2	1 04	—17	+09
HATS AND CAPS.				
1896,	3	1 22	......	......
1897,	3	1 27	+05	......
1898,	3	1 10	—17	......
1899,	3	1 21	+11	......
1900,	3	1 22	+01	......
1901,	3	1 23	+01	+01
FUR AND FELT HATS.				
1896,	4	1 30	......	......
1897,	4	1 59	+29	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896
FUR AND FELT HATS—Continued.			Cts.	Cts.
1898,	4	$1 54	—05	......
1899,	4	1 52	—02	......
1900,	4	1 55	+03	......
1901,	4	1 55	......	+25
WOOL HATS.				
1896,	7	1 16	......	......
1897,	7	1 23	+07	......
1898,	7	1 05	—18	......
1899,	7	1 14	+09	......
1900,	7	1 31	+17	......
1901,	7	1 24	—07	+08
UMBRELLAS AND PARASOLS.				
1896,	4	75	......	......
1897,	4	97	+22	......
1898,	4	87	—10	......
1899,	4	89	+02	......
1900,	4	87	—02	......
1901,	4	90	+03	+15
DRESS TRIMMINGS, BRAIDS, ETC.				
1896,	8	94	......	......
1897,	8	93	—01	......
1898,	8	90	—03	......
1899,	8	91	+01	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
DRESS TRIMMINGS BRAIDS, ETC.—Continued.			Cts.	Cts.
1900, ...	8	$1 01	+10	......
1901, ...	8	1 01	......	+0
SHIRST AND SHIRT WAISTS,				
1896, ...	9	1 02	......	......
1897, ...	9	91	—11	......
1898, ...	9	91	......	......
1899, ...	9	1 01	+10	......
1900, ...	9	1 05	+04	......
1901, ...	9	1 07	+02	+05
NECKWEAR.				
1896, ...	3	1 25	......	......
1897, ...	3	1 18	—07	......
1898, ...	3	1 22	+04	......
1899, ...	3	1 23	+01	......
1900, ...	3	1 19	—04	......
1901, ...	3	1 03	—16	—22
COTTON AND WOOLEN CLOTHS.				
1896, ...	24	1 18	......	......
1897, ...	24	1 21	+03	......
1898, ...	24	1 32	+11	......
1899, ...	24	1 36	+04	......
1900, ...	24	1 25	—11	......
1901, ...	24	1 26	+01	+08

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CARPETS.			Cts.	Cts.
1896,	17	$1 31	......	......
1897,	17	1 25	—06	......
1898,	17	1 24	—01	......
1899,	17	1 37	+13	......
1900,	17	1 40	+03	......
1901,	17	1 50	+10	+19
COTTON GOODS.				
1896,	16	1 08	......	......
1897,	16	1 12	+04	......
1898,	16	1 11	—01	......
1899,	16	1 13	+02	......
1900,	16	1 19	+06	......
1901,	16	1 17	—02	+09
WOOLEN ND WORSTED CASSIMERES.				
1896,	11	1 13	......	......
1897,	11	1 20	+07	......
1898,	11	1 27	+07	......
1899,	11	1 24	—03	......
1900,	11	1 24	......	......
1901,	11	1 27	+03	+14
WOOLEN AND WORSTED FABRICS.				
1896,	16	1 14	......	......
1897,	16	1 09	—05	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WOOLEN AND WORSTED FABRICS—Continued.			Cts.	Cts.
1898,	16	$1 20	+11	......
1899,	16	1 21	+01	......
1900,	16	1 18	—03	......
1901,	16	1 19	+01	+05
WOOLEN AND WORSTED YARNS.				
1896,	12	1 09	......	......
1897,	12	1 11	+02	......
1898,	12	1 09	—02	......
1899,	12	1 24	+15	......
1900,	12	1 16	—08	......
1901,	12	1 19	+03	+10
RUGS, YARNS, ETC.				
1896,	5	1 25	......	......
1897,	5	1 19	—06	......
1898,	5	1 23	+04	......
1899,	5	1 34	+11	......
1900,	5	1 27	—07	......
1901,	5	1 32	+05	+07
CARPET YARNS.				
1896,	11	1 27	......	......
1897,	11	1 25	—02	......
1898,	11	1 25	......	......
1899,	11	1 28	+03	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CARPETS.			Cts.	Cts.
1896,	17	$1 31	......	......
1897,	17	1 25	—06	......
1898,	17	1 24	—01	......
1899,	17	1 37	+13	......
1900,	17	1 40	+03	......
1901,	17	1 50	+10	+19
COTTON GOODS.				
1896,	16	1 08	......	......
1897,	16	1 12	+04	......
1898,	16	1 11	—01	......
1899,	16	1 13	+02	......
1900,	16	1 19	+06	......
1901,	16	1 17	—02	+09
WOOLEN ND WORSTED CASSIMERES.				
1896,	11	1 13	......	......
1897,	11	1 20	+07	......
1898,	11	1 27	+07	......
1899,	11	1 24	—03	......
1900,	11	1 24	......	......
1901,	11	1 27	+03	+14
WOOLEN AND WORSTED FABRICS.				
1896,	16	1 14	......	......
1897,	16	1 09	—05	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
WOOLEN AND WORSTED FABRICS—Continued.			Cts.	Cts.
1898,	16	$1 20	+11	......
1899,	16	1 21	+01	......
1900,	16	1 18	—03	......
1901,	16	1 19	+01	+05
WOOLEN AND WORSTED YARNS.				
1896,	12	1 09	......	......
1897,	12	1 11	+02	......
1898,	12	1 09	—02	......
1899,	12	1 24	+15	......
1900,	12	1 16	—08	......
1901,	12	1 19	+03	+10
RUGS, YARNS, ETC.				
1896,	5	1 25	......	......
1897,	5	1 19	—06	......
1898,	5	1 23	+04	......
1899,	5	1 34	+11	......
1900,	5	1 27	—07	......
1901,	5	1 32	+05	+07
CARPET YARNS.				
1896,	11	1 27	......	......
1897,	11	1 25	—02	......
1898,	11	1 25	......	......
1899,	11	1 28	+03	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS. 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
KNIT GOODS, UNDERWEAR—Continued.			Cts.	Cts.
1899,	13	$0 99	+04	......
1900,	13	88	—11	......
1901,	13	91	+03	—06
HOSIERY.				
1896,	31	93	......	......
1897,	31	85	—08	......
1898,	31	88	+03	......
1899,	31	93	+05	......
1900,	31	95	+02	......
1901,	31	96	+01	+03
SILK—BROAD GOODS, THROWN SILK, YARNS, ETC.				
1896,	6	92	......	......
1897,	6	76	—16	......
1898,	6	82	+06	......
1899,	6	96	+14	......
1900,	6	84	—12	......
1901,	6	84	......	—08
SILK—BROAD GOODS AND RIBBONS.				
1896,	2	83	......	......
1897,	2	77	—06	......
1898,	2	78	+01	......
1899,	2	87	+09	......

AVERAGE DAILY WAGE—Continued.

COMPARISON OF AVERAGE DAILY WAGE, SKILLED AND UNSKILLED—SAME ESTABLISHMENTS, FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Average daily wage.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1892.
SILK—BROAD GOODS AND RIBBONS—Continued.			Cts.	Cts.
1900,	2	$0 89	+02	......
1901,	2	75	—14	—08
SILK—RIBBONS.				
1896,	4	98	......	......
1897,	4	1 17	+19	......
1898,	4	1 12	—05	......
1899,	4	1 15	+03	......
1900,	4	1 07	—08	......
1901,	4	1 14	+07	+16

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

NOTE...In this table the relative per cent. of cost of basic materials to value of production in same establishments for the years 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1896. Eighty-eight industries, representing 801 establishments, are considered.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
STEEL CASTINGS.				
1896,	7	27.9	......	......
1897,	7	28.9	+1.0	......
1898,	7	24.6	—4.3	......
1899,	7	28.7	+4.1	......
1900,	7	19.5	—9.2	......
1901,	7	22.6	+3.1	—5.3
STEEL BILLETS, SLABS, BLOOMS, ETC.				
1896,	4	80.0	......	......
1897,	4	70.0	—10.0	......
1898,	4	80.8	+10.8	......
1899,	4	76.8	—4.0	......
1900,	4	90.1	+13.3	......
1901,	4	81.0	—9.1	+1.0
TOOL STEEL.				
1896,	3	33.8	......	......
1897,	3	27.6	—6.2	......
1898,	3	20.1	—7.5	.....
1899,	3	20.1	......	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
TOOL STEEL—Continued.				
1900,	3	18.0	—2.1	......
1901,	3	19.0	+1.0	—14.8
IRON AND STEEL FORGINGS.				
1896,	7	38.6	......	......
1897,	7	38.9	+.3	......
1898,	7	33.9	—5.0	......
1899,	7	32.2	—1.7	......
1900,	7	59.2	+27.0	......
1901,	7	37.2	—22.0	—1.4
IRON SPECIALTIES.				
1896,	2	60.4	......	......
1897,	2	64.8	+4.4	......
1898,	2	58.7	—6.1	......
1899,	2	59.8	+1.1	......
1900,	2	57.6	—2.2	......
1901,	2	50.8	—6.8	—9.6
MALLEABLE IRON.				
1896,	4	30.5	......	......
1897,	4	28.0	—2.5	......
1898,	4	30.5	+2.5	......
1899,	4	29.9	—.6	......
1900,	4	39.3	+9.4	......
1901,	4	40.6	+1.3	+10.1

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BOLTS, NUTS, ETC.				
1896,	8	47.3	......	......
1897,	8	48.4	+1.1	......
1898,	8	50.1	+1.7	......
1899,	8	59.1	+9.0	......
1900,	8	50.2	—8.9	......
1901,	8	57.1	+6.9	+9.8
WIRE NAILS AND RIVETS.				
1896,	4	56.4	......	......
1897,	4	59.2	+2.8	......
1898,	4	53.1	—6.1	......
1899,	4	40.9	—12.2	......
1900,	4	56.8	+15.9	......
1901,	4	55.8	—1.0	—.6
TACKS AND SMALL NAILS.				
1896,	4	41.7	......	......
1897,	4	38.1	—3.6	......
1898,	4	37.2	—.9	......
1899,	4	35.4	—1.8	......
1900,	4	37.4	+2.0	......
1901,	4	35.3	—2.1	—6.4
WIRE.				
1896,	5	51.7	......	......
1897,	5	49.0	—2.7	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WIRE—Continued.				
1898,	5	47.7	—1.3	......
1899,	5	43.6	—4.1	......
1900,	5	47.8	+4.2	......
1901,	5	47.2	—.6	—4.5
WIRE ROPE.				
1896,	2	47.5	......	......
1897,	2	38.6	—8.9	......
1898,	2	37.9	—.7	......
1899,	2	37.2	—.7	......
1900,	2	70.4	+33.2	......
1901,	2	64.4	—6.0	+16.9
WIRE GOODS.				
1896,	5	21.0	......	......
1897,	5	22.6	+1.6	......
1898,	5	19.2	—3.4	......
1899,	5	22.4	+3.2	......
1900,	5	24.9	+2.5	......
1901,	5	30.0	+5.1	+9.0
WAGON AND CARRIAGE AXLES AND SPRINGS.				
1896,	6	31.4	......	......
1897,	6	30.3	—1.1	......
1898,	6	22.7	—7.6	......
1899,	6	30.9	+8.2	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WAGON AND CARRIAGE AXLES AND SPRINGS—Continued.				
1900,	6	32.3	+1.4	......
1901,	6	37.4	+5.1	+6.0
SCALES, ETC.				
1896,	4	34.0	......	......
1897,	4	33.6	—.4	......
1898,	4	33.5	—.1	......
1899,	4	32.1	—1.4	......
1900,	4	32.6	+.5	......
1901,	4	31.7	—.9	—2.3
STOVES, RANGES, HEATERS, ETC.				
1896,	37	20.5	......	......
1897,	37	20.2	—.3	......
1898,	37	20.5	+.3	......
1899,	37	21.4	+.9	......
1900,	37	26.3	+4.9	......
1901,	37	24.8	—1.5	+4.3
BATH BOILERS, TANKS, ETC.				
1896,	2	54.6	......	......
1897,	2	48.9	—5.7	......
1898,	2	49.4	+.5	......
1899,	2	50.0	+.6	......
1900,	2	53.7	+3.7	......
1901,	2	51.8	—1.9	—2.8

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
HARDWARE SPECIALTIES.				
1896,	14	26.8	......	......
1897,	14	24.9	—1.9	......
1898,	14	24.8	—.1	......
1899,	14	27.0	+2.2	......
1900,	14	25.4	—1.6	......
1901,	14	26.3	+.9	—.5
EDGE TOOLS.				
1896,	12	41.9	......	......
1897,	12	28.5	—13.4	......
1898,	12	27.4	—1.1	......
1899,	12	28.7	+1.3	......
1900,	12	30.1	+1.4	......
1901,	12	33.6	+3.5	—8.3
WRENCHES, PICKS, ETC.				
1896,	5	32.5	......	......
1897,	5	33.0	+.5	......
1898,	5	29.0	—4.0	......
1899,	5	33.4	+4.4	......
1900,	5	37.1	+3.7	......
1901,	5	31.6	—5.5	—.9
LOCOMOTIVES AND CARS BUILT AND REPAIRED.				
1896,	3	54.2	......	......
1897,	3	50.2	—4.0	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
LOCOMOTIVES AND CARS BUILT AND REPAIRED—Continued.				
1898,	3	52.4	+2.2	......
1899,	3	56.2	+3.8	......
1900,	3	57.7	+1.5	......
1901,	3	55.8	—1.9	+1.6
WROUGHT IRON PIPE AND TUBES.				
1896,	5	66.9	......	......
1897,	5	62.6	—4.3	......
1898,	5	56.9	—5.7	......
1899,	5	59.2	+2.3	......
1900,	5	60.5	+1.3	......
1901,	5	55.3	—5.2	—11.6
CAST IRON PIPE.				
1896,	3	66.5	......	......
1897,	3	64.8	—1.7	......
1898,	3	64.3	—.5	......
1899,	3	67.6	+3.3	......
1900,	3	64.4	—3.2	......
1901,	3	62.6	—1.8	—3.9
BRASS, COPPER AND BRONZE GOODS.				
1896,	19	51.5	......	......
1897,	19	55.9	+4.4	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BRASS, COPPER AND BRONZE GOODS—Continued.				
1898,	19	54.6	+1.3	......
1899,	19	60.2	+5.6	......
1900,	19	45.8	—14.4	......
1901,	19	61.9	+16.1	+10.4
IRON AND STEEL BRIDGES.				
1896,	7	58.5	......	......
1897,	7	55.6	—2.9	......
1898,	7	57.2	+1.6	......
1899,	7	62.7	+5.5	......
1900,	7	64.1	+1.4	......
1901,	7	59.1	—5.0	+0.6
LOCOMOTIVES. STATIONERY ENGINES, ETC.				
1896,	9	48.1	......	......
1897,	9	46.1	—2.0	......
1898,	9	41.9	—4.2	......
1899,	9	49.0	+7.1	......
1900,	9	47.0	—2.0	......
1901,	9	45.4	—1.6	—2.7
ENGINES, BOILERS, ETC.				
1896,	10	48.2	......	......
1897,	10	49.9	+1.7	......
1898,	10	49.0	—.9	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
ENGINES, BOILERS, ETC.—Continued.				
1899,	10	51.0	+2.0	......
1900,	10	48.7	—2.3	......
1901,	10	48.8	+.1	+.6
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES.				
1896,	12	49.3	......	......
1897,	12	44.5	—4.8	......
1898,	12	33.5	—11.0	......
1899,	12	56.3	+22.8	......
1900,	12	62.1	+5.8	......
1901,	12	65.0	+2.9	+15.7
IRON VESSELS AND ENGINES.				
1896,	3	38.5	......	......
1897,	3	44.0	+5.5	......
1898,	3	45.2	+1.2	......
1899,	3	55.8	+10.6	......
1900,	3	55.6	—.2	......
1901,	3	56.3	+.7	+17.8
BOILERS, TANKS, STACKS, ETC.				
1896,	21	39.0	......	......
1897,	21	45.4	+6.4	......
1898,	21	47.8	+2.4	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BOILERS, TANKS, STACKS, ETC.—Continued.				
1899,	21	53.5	+5.7	......
1900,	21	52.5	—1.0	......
1901,	21	53.9	+1.4	+14.9
MACHINERY.				
1896,	21	32.4	......	......
1897,	21	31.2	—1.2	......
1898,	21	31.2	......	......
1899,	21	37.1	+5.9	......
1900,	21	35.8	—1.3	......
1901,	21	36.5	+.7	+4.1
FOUNDRIES AND MACHINE SHOPS.				
1896,	25	33.1	......	......
1897,	25	35.4	+2.3	......
1898,	25	35.4	......	......
1899,	25	37.0	+1.6	......
1900,	25	34.7	—2.3	......
1901,	25	35.2	+.5	+2.1
FILES, ETC.				
1896,	2	29.7	......	......
1897,	2	28.0	—1.7	......
1898,	2	20.7	—7.3	......
1899,	2	23.0	+2.3	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION— Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
FILES, ETC.—Continued.				
1900,	2	23.8	+.8	......
1901,	2	20.2	—3.6	—9.5
SAWS.				
1896,	3	42.0	......	......
1897,	3	37.5	—4.5	......
1898,	3	36.8	—.7	......
1899,	3	37.8	+1.0	......
1900,	3	36.4	—1.4	......
1901,	3	34.9	—1.5	—7.1
PLUMBER SUPPLIES.				
1896,	3	*	......	......
1897,	3	*	......	......
1898,	3	*	......	......
1899,	3	38.4	......	......
1900,	3	32.6	—5.8	......
1901,	3	33.9	+1.3	......
ELECTRICAL SUPPLIES.				
1896,	4	36.6	......	......
1897,	4	39.4	+2.8	......
1898,	4	34.3	—5.1	......
1899,	4	31.2	—3.1	......
1900,	4	34.8	+3.6	......
1901,	4	34.9	+.1	—1.7

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*Incomplete returns of value of basic material.

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SHOVELS, SPADES, SCOOPS, ETC.				
1896,	8	38.6	......	......
1897,	8	34.4	—4.2	......
1898,	8	29.7	—4.7	......
1899,	8	31.2	+1.5	......
1900,	8	35.8	+4.6	......
1901,	8	33.5	—2.3	—5.1
SAFES AND VAULT DOORS.				
1896,	2	43.7	......	......
1897,	2	40.1	—3.6	......
1898,	2	43.1	+3.0	......
1899,	2	41.8	—1.3	......
1900,	2	47.1	+5.3	......
1901,	2	44.6	—2.5	+0.9
METAL AND METALLIC GOODS.				
1896,	3	29.1	......	......
1897,	3	27.2	—1.9	......
1898,	3	28.0	+.8	......
1899,	3	27.4	—.6	......
1900,	3	28.0	+.6	......
1901,	3	28.9	+.9	—.2
BUILDING AND STRUCTURAL IRON WORKS.				
1896,	2	43.8	......	......
1897,	2	55.0	+11.2	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BUILDING AND STRUCTURAL IRON WORKS—Continued.				
1898,	2	60.3	+5.3	......
1899,	2	56.9	—3.4	......
1900,	2	66.8	+9.9	......
1901,	2	51.9	—14.9	+8.1
IRON CHAINS.				
1896,	5	38.4	......	......
1897,	5	37.6	—.8	......
1898,	5	40.5	+2.9	......
1899,	5	43.2	+2.7	......
1900,	5	47.0	+3.8	......
1901,	5	42.6	—4.4	+4.2
IRON FENCES AND RAILINGS.				
1896,	7	40.1	......	......
1897,	7	40.3	+.2	......
1898,	7	43.8	+3.5	......
1899,	7	51.1	+7.3	......
1900,	7	51.3	+.2	......
1901,	7	54.4	+3.1	+14.3
AGRICULTURAL IMPLEMENTS.				
1896,	12	45.6	......	......
1897,	12	42.2	—3.4	......
1898,	12	41.2	—1.0	......
1899,	12	43.4	+2.2	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
AGRICULTURAL IMPLEMENTS —Continued.				
1900,	12	46.7	+3.3	......
1901,	12	43.7	—3.0	—1.9
STEAM PUMPS.				
1896,	2	43.9	......	......
1897,	2	51.1	+7.2	......
1898,	2	39.5	—11.6	......
1899,	2	42.9	+3.4	......
1900,	2	31.1	—11.8	......
1901,	2	43.4	+12.3	—.5
BICYCLES.				
1896,	3	60.2	......	......
1897,	3	71.5	+11.3	......
1898,	3	66.6	—4.9	......
1899,	3	58.9	—7.7	......
1900,	3	64.8	+5.9	......
1901,	3	70.6	+5.8	+10.4
PIANOS AND ORGANS.				
1896,	2	34.5	......	......
1897,	2	38.8	+4.3	......
1898,	2	42.2	+3.4	......
1899,	2	33.1	—9.1	......
1900,	2	38.6	+5.5	......
1901,	2	42.3	+3.7	+7.8

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
TINWARE.				
1896,	5	45.8	......	......
1897,	5	46.3	+.5	......
1898,	5	46.3	......	......
1899,	5	49.9	+3.6	......
1900,	5	52.4	+2.5	......
1901,	5	52.8	+.4	+7.0
PAPER MANUFACTORIES.				
1896,	8	47.0	......	......
1897,	8	43.9	—3.1	......
1898,	8	44.8	+.9	......
1899,	8	40.9	—3.9	......
1900,	8	37.4	—3.5	......
1901,	8	38.9	+1.5	—8.1
WALL PAPER.				
1896,	4	49.8	......	......
1897,	4	50.5	+.7	......
1898,	4	51.1	+.6	......
1899,	4	50.0	—1.1	......
1900,	4	53.1	+3.1	......
1901,	4	62.2	+9.1	+12.4
CIGARS.				
1896,	46	37.9	......	......
1897,	46	40.4	+2.5	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CIGARS—Continued.				
1898,	46	41.2	+.8	......
1899,	46	39.2	—2.0	......
1900,	46	38.9	—.3	......
1901,	46	38.3	—.6	+.4
BOOK BINDING.				
1896,	3	37.3	......	......
1897,	3	38.2	+.9	......
1898,	3	36.3	—1.9	......
1899,	3	37.1	+.8	......
1900,	3	38.5	+1.4	......
1901,	3	40.2	+1.7	+2.9
CORDAGE, ROPE AND TWINE.				
1896,	5	70.4	......	......
1897,	5	73.9	+3.5	......
1898,	5	71.2	—2.7	......
1899,	5	72.5	+1.3	......
1900,	5	77.1	+4.6	......
1901,	5	76.2	—.9	+5.8
PAPER, PAPER BOXES, ENVELOPES, ETC.				
1896,	27	46.6	......	......
1897,	27	47.2	+.6	......
1898,	27	45.8	—1.4	......
1899,	27	45.7	—.1	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
PAPER, PAPER BOXES, ENVELOPES, ETC.—Continued.				
1900,	27	49.0	+3.3	......
1901,	27	46.5	—2.5	—.1
POTTERY.				
1896,	2	32.9	......	......
1897,	2	29.3	—3.6	......
1898,	2	25.0	—4.3	......
1899,	2	22.4	—2.6	......
1900,	2	27.8	+5.4	......
1901,	2	29.4	+1.6	—3.5
PAVING BRICK.				
1896,	7	9.9	......	......
1897,	7	7.2	—2.7	......
1898,	7	6.3	—.9	......
1899,	7	8.0	+1.7	......
1900,	7	12.0	+4.0	......
1901,	7	9.0	—3.0	—.9
BUILDING BRICK.				
1896,	35	11.1	......	......
1897,	35	11.0	—.1	......
1898,	35	11.7	+.7	......
1899,	35	10.8	—.9	......
1900,	35	10.3	—.5	......
1901,	35	10.5	+.2	—.6

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
FIRE BRICK.				
1896,	18	25.8	......	......
1897,	18	24.4	—1.4	......
1898,	18	21.8	—2.6	......
1899,	18	22.2	+.4	......
1900,	18	22.2	......	......
1901,	18	22.5	+.3	—3.3
SLATE ROOFING, ETC., TONNAGE.				
1896,	6	8.3	......	......
1897,	6	7.1	—1.2	......
1898,	6	6.0	—1.1	......
1899,	6	6.8	+.8	......
1900,	6	5.4	—1.4	......
1901,	6	5.8	+.4	—2.5
SLATE ROOFING, ETC., SQUARES.				
1896,	14	9.4	......	......
1897,	14	9.1	—.3	......
1898,	14	9.2	+.1	......
1899,	14	8.6	—.6	......
1900,	14	7.8	—.8	......
1901,	14	8.9	+1.1	—.5

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WINDOW GLASS, BOTTLES AND TABLE GOODS.				
1896,	22	25.2	......	......
1897,	22	24.3	—.9	......
1898,	22	20.6	—3.7	......
1899,	22	21.4	+.8	......
1900,	22	20.3	—1.1	......
1901,	22	20.5	+.2	—4.7
GLAZED ON CHROME KID.				
1896,	7	70.0	......	......
1897,	7	66.8	—3.2	......
1898,	7	63.8	—3.0	......
1899,	7	67.4	+3.6	......
1900,	7	62.0	—5.4	......
1901,	7	49.3	—12.7	—20.7
MEN'S, WOMEN'S, MISSES AND CHILDREN'S SHOES.				
1896,	15	56.4	......	......
1897,	15	58.4	+2.0	......
1898,	15	56.7	—.7	......
1899,	15	56.9	+.2	......
1900,	15	55.6	—1.3	......
1901,	15	58.0	+2.4	+1.6
SUSPENDERS.				
1896,	2	63.0	......	......
1897,	2	66.9	+3.9	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SUSPENDERS—Continued.				
1898,	2	62.6	—4.3	......
1899,	2	65.2	+2.6	......
1900,	2	70.5	+5.3	......
1901,	2	67.9	—2.6	+4.9
HATS AND CAPS.				
1896,	3	54.1	......	......
1897,	3	52.9	—1.2	......
1898,	3	51 2	—1.7	......
1899,	3	62.0	+10.8	......
1900,	3	56.4	—5.6	......
1901,	3	44.7	—11.7	—9.4
FUR AND FELT HATS.				
1896,	4	30.6	......	......
1897,	4	30.6	......	......
1898,	4	28.6	—2.0	......
1899,	4	29.4	+.8	......
1900,	4	29.3	—.1	......
1901,	4	29.6	+.3	—1.0
WOLL HATS.				
1896,	7	51.8	......	......
1897,	7	53.0	+1.2	......
1898,	7	49.3	—3.7	......
1899,	7	44.7	—4.6	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WOOL HATS—Continued.				
1900,	7	50.6	+5.9	......
1901,	7	49.1	—1.5	—2.7
UMBRELLAS AND PARASOLS.				
1896,	4	59.1	......	......
1897,	4	59.7	+.6	......
1898,	4	65.2	+5.5	......
1899,	4	56.4	—8.8	......
1900,	4	67.8	+11.4	......
1901,	4	73.0	+5.2	+13.9
DRESS TRIMMINGS, BRAIDS, ETC.				
1896,	8	44.0	......	......
1897,	8	46.6	+2.6	......
1898,	8	51.3	+4.7	......
1899,	8	43.8	—7.5	......
1900,	8	46.9	+3.1	......
1901,	8	47.1	+.2	+3.1
SHIRTS AND SHIRT WAISTS.				
1896,	9	46.8	......	......
1897,	9	49.9	+3.1	......
1898,	9	52.3	+2.4	......
1899,	9	50.3	—2.0	......
1900,	9	50.3	......	......
1901,	9	48.6	—1.7	+1.8

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
NECKWEAR.				
1896,	3	57.0	......	......
1897,	3	56.8	—.2	......
1898,	3	57.1	+.3	......
1899,	3	59.8	+2.7	......
1900,	3	59.7	—.1	......
1901,	3	61.8	+2.1	+4.8
COTTON AND WOOLEN CLOTHS.				
1896,	24	53.3	......	......
1897,	24	59.0	+5.7	......
1898,	24	57.9	—1.1	......
1899,	24	57.7	—.2	......
1900,	24	55.2	—2.5	......
1901,	24	56.2	+1.0	+2.9
CARPETS.				
1896,	17	58.7	......	......
1897,	17	60.8	+2.1	......
1898,	17	59.1	—1.7	......
1899,	17	58.8	—.3	......
1900,	17	60.7	+1.9	......
1901,	17	59.3	—1.4	+.6
COTTON GOODS.				
1896,	16	53.8	......	......
1897,	16	50.0	—3.8	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
COTTON GOODS—Continued.				
1898,	16	47.6	—2.4	......
1899,	16	48.3	+.7	......
1900,	16	48.7	+.4	......
1901,	16	50.6	+1.9	—3.2
WOOLEN AND WORSTED CASSIMERES.				
1896,	11	52.5	......	......
1897,	11	55.3	+2.8	......
1898,	11	56.5	+1.2	......
1899,	11	58.0	+1.5	......
1900,	11	51.2	—6.8	......
1901,	11	52.3	+1.1	+.2
WOOLEN AND WORSTED FABRICS.				
1896,	16	53.3	......	......
1897,	16	56.0	+2.7	......
1898,	16	57.0	+1.0	......
1899,	16	58.2	+1.2	......
1900,	16	58.4	+.2	......
1901,	16	59.5	+1.1	+6.2
WOOLEN AND WORSTED YARNS.				
1896,	12	60.2	......	......
1897,	12	67.9	+7.7	......
1898,	12	52.2	—15.7	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WOOLEN AND WORSTED YARNS—Continued.				
1899,	12	50.2	—2.0	......
1900,	12	55.9	+5.7	......
1901,	12	66.8	+10.9	+6.6
RUGS, YARNS, ETC.				
1896,	5	47.8	......	......
1897,	5	47.4	—.4	......
1898,	5	44.3	—3.1	......
1899,	5	43.0	—1.3	......
1900,	5	45.2	+2.2	......
1901,	5	48.3	+3.1	+.5
CARPET YARNS.				
1896,	11	69.1	......	......
1897,	11	73.2	+4.1	......
1898,	11	68.0	—5.2	......
1899,	11	71.2	+3.2	......
1900,	11	68.4	—2.8	......
1901,	11	63.9	—4.5	—5.2
COTTON YARNS.				
1896,	7	66.9	......	......
1897,	7	65.8	—1.1	......
1898,	7	60.9	—4.9	......
1899,	7	59.9	—1.0	......
1900,	7	62.9	+3.0	......
1901,	7	63.1	+.2	—3.8

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total production in tons or given quantity.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WORSTED, WOOLEN AND COTTON YARNS.				
1896,	10	59.5	......	......
1897,	10	60.2	+.7	......
1898,	10	59.7	—.5	......
1899,	10	59.3	—.4	......
1900,	10	65.2	+5.9	......
1901,	10	66.7	+1.5	+7.2
WOOLEN BLANKETS, FLANNELS, ETC.				
1896,	5	48.4	......	......
1897,	5	52.3	+3.9	......
1898,	5	53.8	+1.5	......
1899,	5	49.9	—3.9	......
1900,	5	44.0	—5.9	......
1901,	5	53.2	+9.2	+4.8
LACE GOODS.				
1896,	3	20.9	......	......
1897,	3	23.2	+2.3	......
1898,	3	23.8	+.6	......
1899,	3	26.8	+3.0	......
1900,	3	28.7	+1.9	......
1901,	3	30.6	+1.9	+9.7
CHENILLE GOODS.				
1896,	3	59.2	......	......
1897,	3	57.5	—1.7	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or de- 1901 as compared with 1896.
CHENILLE GOODS—Continued.				
1898,	3	60.3	+2.8	......
1899,	3	54.9	—5.4	......
1900,	3	55.2	+.3	......
1901,	3	53.9	—1.3	—5.3
UPHOLSTERY GOODS.				
1896,	10	53.4	......	......
1897,	10	52.3	—1.1	......
1898,	10	52.4	+.1	......
1899,	10	49.2	—3.2	......
1900,	10	49.0	—.2	......
1901,	10	46.0	—3.0	—7.4
KNIT GOODS, UNDERWEAR.				
1896,	13	59.1	......	......
1897,	13	57.7	—1.4	......
1898,	13	58.9	+1.2	......
1899,	13	57.5	—1.4	......
1900,	13	67.5	+10.0	......
1901,	13	64.2	—3.3	+5.1
HOSIERY.				
1896,	31	43.4	......	......
1897,	31	46.9	+3.5	......
1898,	31	47.4	+.5	......
1899,	31	44.0	—3.4	......

COST OF BASIC MATERIAL TO VALUE OF PRODUCTION—Continued.

COMPARISON OF BASIC MATERIAL TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. basic material to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
HOSIERY—Continued.				
1900,	31	45.3	+1.3	......
1901,	31	45.0	—.3	+1.6
SILK—BROAD GOODS, THROWN SILK, YARNS, ETC.				
1896,	6	68.1	......	......
1897,	6	68.8	+.7	......
1898,	6	67.8	—1.0	......
1899,	6	67.7	—.1	......
1900,	6	72.8	+5.1	......
1901,	6	64.4	—8.4	—3.7
SILK—BROAD GOODS AND RIBBONS.				
1896,	2	48.3	......	......
1897,	2	42.1	—6.2	......
1898,	2	41.4	—.7	......
1899,	2	42.3	+.9	......
1900,	2	40.5	—1.8	......
1901,	2	37.5	—3.0	—10.8
SILK RIBBONS.				
1896,	4	43.9	......	......
1897,	4	51.4	+7.5	......
1898,	4	48.2	—3.2	......
1899,	4	49.9	+1.7	......
1900,	4	43.7	—6.2	......
1901,	4	47.6	+3.9	+3.7

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

NOTE.—In this table the relative per cent. of wages to value of production by the same establishments for the years 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1896. Eighty-eight industries, representing 801 establishments, are considered.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
STEEL CASTINGS.				
1896,	7	30.9	......	......
1897,	7	34.4	+3.5	......
1898,	7	29.5	—4.9	......
1899,	7	29.3	—.2	......
1900,	7	25.9	—3.4	......
1901,	7	28.9	+3.0	—2.0
STEEL BILLETS, SLABS, BLOOMS, ETC.				
1896,	4	8.7	......	......
1897,	4	6.0	—2.7	......
1898,	4	8.5	+2.5	......
1899,	4	6.6	—1.9	......
1900,	4	7.4	+.8	......
1901,	4	7.8	+.4	—.9
TOOL STEEL.				
1896,	3	20.4	......	......
1897,	3	27.5	+7.1	......
1898,	3	34.4	+6.9	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
TOOL STEEL—Continued.				
1899,	3	29.4	—5.0	......
1900,	3	22.6	—6.8	......
1901,	3	19.9	—2.7	—.5
IRON AND STEEL FORGINGS.				
1896,	7	33.2	......	......
1897,	7	38.3	+5.1	......
1898,	7	38.0	—.3	......
1899,	7	31.8	—6.2	......
1900,	7	35.3	+3.5	......
1901,	7	33.8	—1.5	+.6
IRON SPECIALTIES.				
1896,	2	22.8	......	......
1897,	2	19.1	—3.7	......
1898,	2	23.9	+4.8	......
1899,	2	22.8	—1.1	......
1900,	2	22.7	—.1	......
1901,	2	24.0	+1.3	+1.2
MALLEABLE IRON.				
1896,	4	36.7	......	......
1897,	4	39.8	+3.1	......
1898,	4	33.9	—5.9	......
1899,	4	33.1	—.8	......
1900,	4	34.9	+1.8	......
1901,	4	43.6	+8.7	+6.9

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
BOLTS, NUTS, ETC.				
1896,	8	28.5	......	......
1897,	8	25.2	—3.3	......
1898,	8	24.5	—.7	......
1899,	8	19.3	—5.2	......
1900,	8	17.9	—1.4	......
1901,	8	22.7	+4.8	—5.8
WIRE NAILS AND RIVETS.				
1896,	4	17.2	......	......
1897,	4	16.5	—.7	......
1898,	4	17.1	+.6	......
1899,	4	13.6	—3.5	......
1900,	4	12.3	—1.3	......
1901,	4	14.5	+2.2	—2.7
TACKS AND SMALL NAILS.				
1896,	4	29.5	......	......
1897,	4	29.6	+.1	......
1898,	4	26.0	—3.6	......
1899,	4	28.3	+2.3	......
1900,	4	26.3	—2.0	......
1901,	4	24.8	—1.5	—4.7
WIRE.				
1896,	5	19.7	......	......
1897,	5	18.0	—1.7	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WIRE—Continued.				
1898,	5	22.4	+4.2	......
1899,	5	24.9	+2.5	......
1900,	5	23.0	—1.9	......
1901,	5	23.3	+.3	+3.6
WIRE ROPE.				
1896,	2	11.4	......	......
1897,	2	12.5	+1.1	......
1898,	2	13.6	+1.1	......
1899,	2	11.7	—1.9	......
1900,	2	11.2	—.5	......
1901,	2	10.0	—1.2	—1.4
WIRE GOODS.				
1896,	5	26.1	......	......
1897,	5	25.8	—.3	......
1898,	5	19.6	—6.2	......
1899,	5	20.9	+1.3	......
1900,	5	18.8	—2.1	......
1901,	5	19.3	+.5	—6.8
WAGON AND CARRIAGE AXLES AND SPRINGS.				
1896,	6	31.4	......	......
1897,	6	32.3	+.9	......
1898,	6	32.6	+.3	......
1899,	6	28.2	—4.4	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
WAGON AND CARRIAGE AXLES AND SPRINGS—Continued.				
1900,	6	32.2	+4.0	......
1901,	6	35.4	+3.2	+4.0
SCALES, ETC.				
1896,	4	28.5	......	......
1897,	4	27.7	—.8	......
1898,	4	28.8	+1.1	......
1899,	4	27.8	—1.0	......
1900,	4	28.2	+.4	......
1901,	4	27.9	—.3	—.6
STOVES, RANGES, HEATERS, ETC.				
1896,	37	39.6	......	......
1897,	37	39.4	—.2	......
1898,	37	27.3	—12.1	......
1899,	37	39.1	+11.8	......
1900,	37	39.7	+.6	......
1901,	37	41.3	+1.6	+1.7
BATH BOILERS, TANKS, ETC.				
1896,	2	19.8	......	......
1897,	2	19.6	—.2	......
1898,	2	21.9	+2.3	......
1899,	2	21.7	—.2	......
1900,	2	20.3	—1.4	......
1901,	2	20.9	+.6	+1.1

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
HARDWARE SPECIALTIES.				
1896,	14	42.2	......	......
1897,	14	39.2	—3.0	......
1898,	14	39.9	+.7	......
1899,	14	37.2	—2.7	......
1900,	14	36.7	—.5	......
1901,	14	37.3	+.6	—4.9
EDGE TOOLS.				
1896,	12	32.9	......	......
1897,	12	39.0	+6.1	......
1898,	12	37.6	—1.4	......
1899,	12	34.1	—3.5	......
1900,	12	31.4	—2.7	......
1901,	12	33.2	+1.8	+.3
WRENCHES, PICKS, ETC.				
1896,	5	29.3	......	......
1897,	5	26.6	—2.7	......
1898,	5	28.1	+1.5	......
1899,	5	26.2	—1.9	......
1900,	5	26.7	+.5	......
1901,	5	25.7	—1.0	—3.6
LOCOMOTIVES AND CARS BUILT AND REPAIRED.				
1896,	3	43.4	......	......
1897,	3	46.2	+2.8	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
LOCOMOTIVES AND CARS BUILT AND REPAIRED—Continued.				
1898,	3	42.6	—3.6	......
1899,	3	40.4	—2.2	......
1900,	3	39.0	—1.4	......
1901,	3	39.5	+.5	—3.9
WROUGHT IRON PIPE AND TUBES.				
1896,	5	18.2	......	......
1897,	5	18.0	—.2	......
1898,	5	16.9	—1.1	......
1899,	5	17.5	+.6	......
1900.	5	12.1	—5.4	......
1901,	5	12.1	......	—6.1
CAST IRON PIPE.				
1896,	3	24.3	......	......
1897.	3	21.2	—3.1	......
1898.	3	20.1	—1.1	......
1899,	3	19.3	—.8	......
1900,	3	20.5	+1.2	......
1901,	3	20.0	—.5	—4.3
BRASS, COPPER AND BRONZE GOODS.				
1896,	19	22.4	......	......
1897,	19	24.1	+1.7	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BRASS, COPPER AND BRONZE GOODS—Continued.				
1898,	19	23.8	—.3	......
1899,	19	18.6	—5.2	......
1900,	19	21.3	+2.7	......
1901,	19	20.8	—.5	—1.6
IRON AND STEEL BRIDGES.				
1896,	7	17.2	......	......
1897,	7	18.1	+.9	......
1898	7	17.4	—.7	......
1899,	7	14.2	—3.2	......
1900,	7	14.3	+.1	......
1901,	7	18.3	+4.0	+1.1
LOCOMOTIVES, STATIONARY ENGINES, ETC.				
1896,	9	35.6	......	......
1897,	9	35.6	......	......
1898,	9	35.5	—.1	......
1899,	9	32.8	—2.7	......
1900,	9	29.6	—3.2	......
1901,	9	30.7	+1.1	—4.9
ENGINES, BOILERS, ETC.				
1896,	10	31.6	......	......
1897,	10	31.6	......	......
1898,	10	32.3	+.7	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
ENGINES, BOILERS, ETC.—Continued.				
1899,	10	25.9	—6.4	......
1900,	10	25.7	—.2	......
1901,	10	27.9	+2.2	—3.7
CARS, SPRINGS, AXLES AND RAILWAY SUPPLIES.				
1896,	12	21.1	......	......
1897,	12	21.3	+.2	......
1898,	12	18.1	—3.2	......
1899,	12	18.1	......	......
1900,	12	16.1	—2.0	......
1901,	12	18.3	+2.2	—2.8
IRON VESSELS AND ENGINES.				
1896,	3	46.5	......	......
1897,	3	41.0	—5.5	......
1898,	3	43.4	+2.4	......
1899,	3	37.4	—6.0	......
1900,	3	29.3	—8.1	......
1901,	3	33.8	+4.5	—12.7
BOILERS, TANKS, STACKS, ETC.				
1896,	21	27.8	......	......
1897,	21	28.1	+.3	......
1898,	21	26.1	—2.0	......
1899,	21	22.6	—3.5	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BOILERS, TANKS, STACKS, ETC.—Continued.				
1900,	21	21.9	—.7	......
1901,	21	22.3	+.4	—5.5
MACHINERY.				
1896,	21	36.2	......	......
1897,	21	36.1	—.1	......
1898,	21	37.0	+.9	......
1899,	21	35.8	—1.2	......
1900,	21	32.7	—3.1	......
1901,	21	33.3	+.6	—2.9
FOUNDRIES AND MACHINE SHOPS.				
1896,	25	36.2	......	......
1897,	25	33.6	—2.6	......
1898,	25	33.2	—.4	......
1899,	25	30.2	—3.0	......
1900,	25	29.8	—.4	......
1901,	25	33.4	+3.6	—2.8
FILES, ETC.				
1896,	2	33.9	......	......
1897,	2	33.6	—.3	......
1898,	2	29.4	—4.2	......
1899,	2	29.8	+.4	......
1900,	2	29.4	—.4	......
1901,	2	26.2	—3.2	—7.7

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. value of wages to production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SAWS.				
1896,	3	29.0	......	......
1897,	3	30.2	+1.2	......
1898,	3	30.0	—.2	......
1899,	3	28.8	—1.2	......
1900,	3	24.4	—4.4	......
1901,	3	25.9	+1.5	—3.1
PLUMBER SUPPLIES.				
1896,	3	38.9	......	......
1897,	3	39.2	+.3	......
1898,	3	39.5	+.3	......
1899,	3	35.0	—4.5	......
1900,	3	38.8	+3.8	......
1901,	3	36.9	—1.9	—2.0
ELECTRICAL SUPPLIES.				
1896,	4	34.9	......	......
1897,	4	34.2	—.7	......
1898,	4	28.3	—5.9	......
1899,	4	24.9	—3.4	......
1900,	4	22.8	—2.1	......
1901,	4	25.3	+2.5	—9.6
SHOVELS, SPADES, SCOOPS, ETC.				
1896,	8	26.8	......	......
1897,	8	25.2	—1.6	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
SHOVELS, SPADES, SCOOPS, ETC.—Continued.				
1898,	8	23.7	—1.5	......
1899,	8	19.5	—4.2	......
1900,	8	20.3	+.8	......
1901,	8	17.9	—2.4	—8.9
SAFES AND VAULT DOORS.				
1896,	2	36.0	......	......
1897,	2	38.0	+2.0	......
1898,	2	39.9	+1.9	......
1899,	2	38.2	—1.7	......
1900,	2	30.9	—7.3	......
1901,	2	30.5	—.4	—5.5
METAL AND METALLIC GOODS.				
1896,	3	36.3	......	......
1897,	3	35.7	—.6	......
1898,	3	35.7	......	......
1899,	3	35.5	—.2	......
1900,	3	34.6	—.9	......
1901,	3	33.9	—.7	—2.4
BUILDING AND STRUCTURAL IRON WORK.				
1896,	2	32.0	......	......
1897,	2	27.6	—4.4	......
1898,	2	21.4	—6.2	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. value of wages to production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
BUILDING AND STRUCTURAL IRON WORK—Continued.				
1899,	2	30.5	+9.1	......
1900,	2	19.2	—11.3	......
1901,	2	18.7	—.5	—13.3
IRON CHAINS.				
1896,	5	27.7	......	......
1897,	5	28.8	+1.1	......
1898,	5	29.4	+.6	......
1899,	5	24.0	—5.4	......
1900,	5	24.5	+.5	......
1901,	5	25.4	+.9	—2.3
IRON FENCES AND RAILINGS.				
1896,	7	31.4	......	......
1897,	7	33.6	+2.2	......
1898,	7	30.6	—3.0	......
1899,	7	26.8	—3.8	......
1900,	7	28.8	+2.0	......
1901,	7	27.3	—1.5	—4.1
AGRICULTURAL IMPLEMENTS.				
1896,	12	25.6	......	......
1897,	12	24.3	—1.3	......
1898,	12	24.5	+.2	......
1899,	12	24.3	—.2	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. value of wages to production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
AGRICULTURAL IMPLEMENTS Continued.				
1900,	12	23.9	—.4	......
1901,	12	23.9	......	—1.7
STEAM PUMPS.				
1896,	2	36.3	......	......
1897,	2	41.3	+5.0	......
1898,	2	35.7	—5.6	......
1899,	2	40.5	+4.8	......
1900,	2	29.9	—10.6	......
1901,	2	38.9	+9.0	+2.6
BICYCLES.				
1896,	3	19.3	......	......
1897,	3	24.1	+4.8	......
1898,	3	22.7	—1.4	......
1899,	3	24.3	+1.6	......
1900,	3	26.0	+1.7	......
1901,	3	28.0	+2.0	+8.7
PIANOS AND ORGANS.				
1896,	2	35.9	......	......
1897,	2	35.1	—.8	......
1898,	2	33.5	—1.6	......
1899,	2	27.0	—6.5	......
1900,	2	30.7	+3.7	......
1901,	2	33.1	+2.4	—2.8

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
TINWARE.				
1896,	5	22.5	......	......
1897,	5	22.9	+.4	......
1898,	5	22.0	—.9	......
1899,	5	21.7	—.3	......
1900,	5	24.2	+2.5	......
1901,	5	26.6	+2.4	+4.1
PAPER MANUFACTORIES.				
1896,	8	17.2	......	......
1897,	8	17.8	+.6	......
1898,	8	17.8	......	......
1899,	8	16.2	—1.6	......
1900,	8	16.4	+.2	......
1901,	8	16.2	—.2	—1.0
WALL PAPER.				
1896,	4	13.7	......	......
1897,	4	12.6	—1.1	......
1898,	4	12.1	—.5	......
1899,	4	11.4	—.7	......
1900,	4	14.2	+2.8	......
1901,	4	15.0	+.8	+1.3
CIGARS.				
1896,	46	25.4	......	......
1897,	46	25.2	—.2	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CIGARS—Continued.				
1898,	46	25.2	......	......
1899,	46	25.1	—.1	......
1900,	46	25.6	+.5	......
1901,	46	26.1	+.5	+.7
BOOK BINDING.				
1896,	3	38.7	......	......
1897,	3	40.9	+2.2	......
1898,	3	41.7	+.8	......
1899,	3	41.4	—.3	......
1900,	3	45.3	+3.9	......
1901,	3	43.7	—1.6	+5.0
CORDAGE, ROPE AND TWINE.				
1896,	5	13.0	......	......
1897,	5	14.5	+1.5	......
1898,	5	13.6	—.9	......
1899,	5	12.7	—.9	......
1900,	5	10.7	—2.0	......
1901,	5	10.6	—.1	—2.4
PAPER, PAPER BOXES, ENVELOPES, ETC.				
1896,	27	24.1	......	......
1897,	27	24.9	+.8	......
1898,	27	24.9	......	......
1899,	27	27.4	+2.5	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. value of wages to production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
PAPER, PAPER BOXES, ENVELOPES, ETC.—Continued.				
1900,	27	24.0	—3.4	......
1901,	27	24.0	......	—.1
POTTERY.				
1896,	2	35.1	......	......
1897,	2	35.4	+.3	......
1898,	2	32.6	—2.8	......
1899,	2	32.2	—.4	......
1900,	2	33.7	+1.5	......
1901,	2	33.8	+.1	—1.3
PAVING BRICK.				
1896,	7	42.9	......	......
1897,	7	41.4	—1.5	......
1898,	7	40.3	—1.1	......
1899,	7	42.5	+2.2	......
1900,	7	39.3	—3.2	......
1901,	7	50.1	+10.8	+7.2
BUILDING BRICK.				
1896,	35	42.2	......	......
1897,	35	42.6	+.4	......
1898,	35	43.8	+1.2	......
1899,	35	41.3	—2.5	......
1900,	35	42.4	+1.1	......
1901,	35	42.6	+.2	+.4

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
FIRE BRICK.				
1896,	18	44.3	......	......
1897,	18	45.8	+1.5	......
1898,	18	44.0	—1.8	......
1899,	18	45.6	+1.6	......
1900,	18	45.0	—.6	......
1901,	18	50.4	+5.4	+6.1
SLATE ROOFING, ETC., TONNAGE.				
1896,	6	64.5	......	......
1897,	6	52.4	+12.1	......
1898,	6	46.5	—5.9	......
1899,	6	46.9	+.4	......
1900,	6	53.8	+6.9	......
1901,	6	49.7	—4.1	—14.8
SLATE ROOFING, ETC., SQUARES.				
1896,	14	67.3	......	......
1897,	14	59.8	—7.5	......
1898,	14	62.4	+2.6	......
1899,	14	58.5	—3.9	......
1900,	14	63.6	+5.1	......
1901,	14	63.7	+.1	—3.6

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. value of wages to production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WINDOW GLASS, BOTTLES AND TABLE GOODS.				
1896,	22	44.9	......	......
1897,	22	44.7	—.2	......
1898,	22	44.2	—.5	......
1899,	22	43.5	—.7	......
1900,	22	45.2	+1.7	......
1901,	22	45.5	+.3	+.6
GLAZED AND CHROME KID.				
1896,	7	11.9	......	......
1897,	7	12.7	+.8	......
1898,	7	11.6	—1.1	......
1899,	7	11.7	+.1	......
1900,	7	11.7	......	......
1901,	7	10.9	—.8	—1.0
MEN'S, WOMEN'S, MISSES' AND CHILDREN'S SHOES.				
1896,	15	23.2	......	......
1897,	15	23.7	+.5	......
1898,	15	23.6	—.1	......
1899,	15	23.1	—.5	......
1900,	15	22.8	—.3	......
1901,	15	23.3	+.5	+.1
SUSPENDERS.				
1896,	2	9.7	......	......
1897,	2	9.7	......	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SUSPENDERS—Continued.				
1898,	2	10.5	+.8	......
1899,	2	12.7	+2.2	......
1900,	2	12.2	—.5	......
1901,	2	8.8	—3.4	—.9
HATS AND CAPS.				
1896,	3	23.1	......	......
1897,	3	22.9	—.2	......
1898,	3	23.9	+1.0	......
1899,	3	27.5	+3.6	......
1900,	3	23.5	—4.0	......
1901,	3	23.4	—.1	+.3
FUR AND FELT HATS.				
1896,	4	26.6	......	......
1897,	4	33.0	+6.4	......
1898,	4	34.4	+1.4	......
1899,	4	32.9	—1.5	......
1900,	4	32.4	—.5	......
1901,	4	33.2	+.8	+6.6
WOOL HATS.				
1896,	7	24.1	......	......
1897,	7	22.0	—2.1	......
1898,	7	22.1	+.1	......
1899,	7	21.9	—.2	......
1900,	7	23.4	+1.5	......
1901,	7	23.8	+.4	—.3

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
UMBRELLAS AND PARASOLS.				
1896,	4	12.3	......	......
1897,	4	14.4	+2.1	......
1898,	4	11.7	—2.7	......
1899,	4	11.7	......	......
1900,	4	11.9	+.2	......
1901,	4	11.6	—.3	—.7
DRESS TRIMMINGS, BRAIDS, ETC.				
1896,	8	24.5	......	......
1897,	8	25.8	+1.3	......
1898,	8	24.2	—1.6	......
1899,	8	23.0	—1.2	......
1900,	8	24.3	+1.3	......
1901,	8	24.3	......	—.2
SHIRTS AND SHIRT WAISTS.				
1896,	9	25.1	......	......
1897,	9	25.3	+.2	......
1898,	9	24.7	—.6	......
1899,	9	25.8	+1.1	......
1900,	9	26.1	+.3	......
1901,	9	26.8	+.7	+1.7
NECKWEAR.				
1896,	3	19.1	......	......
1897,	3	17.8	—1.3	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
NECKWEAR—Continued.				
1898,	3	18.4	+.6	......
1899,	3	16.9	—1.5	......
1900,	3	16.7	—.2	......
1901,	3	15.9	—.8	—3.2
COTTON AND WOOLEN CLOTHS.				
1896,	24	26.1	......	......
1897,	24	25.6	—.5	......
1898,	24	25.5	—.1	......
1899,	24	23.4	—2.1	......
1900,	24	24.4	+1.0	......
1901,	24	23.7	—.7	—2.4
CARPETS.				
1896,	17	21.6	......	......
1897,	17	21.7	+.1	......
1898,	17	20.7	—1.0	......
1899,	17	19.8	—.9	......
1900,	17	20.1	+.3	......
1901,	17	19.2	—.9	—2.4
COTTON GOODS.				
1896,	16	29.6	......	......
1897,	16	29.9	+.3	......
1898,	16	31.1	+1.2	......
1899,	16	31.2	+.1	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
COTTON GOODS—Continued.				
1900,	16	29.9	—1.3	......
1901,	16	28.4	—1.5	—1.2
WOOLEN AND WORSTED CASSIMERES.				
1896,	11	21.3	......	......
1897,	11	20.0	—1.3	......
1898,	11	20.2	+.2	......
1899	11	19.0	—1.2	......
1900,	11	20.2	+1.2	......
1901,	11	18.0	—2.2	—3.3
WOOLEN AND WORSTED FABRICS.				
1896,	16	20.6	......	......
1897,	16	20.0	—.6	......
1898,	16	20.0	......	......
1899,	16	20.0	......	......
1900,	16	19.3	—.7	......
1901,	16	18.3	—1.0	—2.3
WOOLEN AND WORSTED YARNS.				
1896,	12	20.4	......	......
1897,	12	15.8	—4.6	......
1898,	12	11.8	—4.0	......
1899,	12	10.2	—1.6	......
1900,	12	12.5	+2.3	......
901,	12	12.9	+.4	—7.5

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
RUGS, YARNS, ETC.				
1896,	5	24.7	......	......
1897,	5	24.4	—.3	......
1898,	5	25.3	+.9	......
1899,	5	26.0	+.7	......
1900,	5	25.8	—.2	......
1901,	5	27.8	+2.0	+3.1
CARPET YARNS.				
1896,	11	15.6	......	......
1897,	11	13.3	—2.3	......
1898,	11	13.8	+.5	......
1899,	11	13.8	......	......
1900,	11	14.1	+.3	......
1901,	11	14.8	+.7	—.8
COTTON YARNS.				
1896,	7	16.6	......	......
1897,	7	17.6	+1.0	......
1898,	7	19.2	+1.6	......
1899,	7	18.3	—.9	......
1900,	7	16.7	—1.6	......
1901,	7	17.3	+.6	+.7
WORSTED, WOOLEN AND COTTON YARNS.				
1896,	10	20.1	......	......
1897,	10	17.4	—2.7	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WORSTED, WOOLEN AND COTTON YARNS—Continued.				
1898.	10	18.7	+1.3	......
1899,	10	15.9	—2.8	......
1900,	10	14.8	—1.1	......
1901,	10	15.1	+.3	—5.0
WOOLEN, BLANKETS, FLANNELS, ETC.				
1896,	5	20.0	......	......
1897,	5	21.6	+1.6	......
1898,	5	16.6	—5.0	......
1899,	5	19.7	+3.1	......
1900,	5	19.3	—.4	......
1901,	5	17.0	—1.4	—2.1
LACE GOODS.				
1896,	3	21.3	......	......
1897,	3	20.6	—.7	......
1898,	3	22.1	+1.5	......
1899,	3	24.0	+1.9	......
1900,	3	27.8	+3.8	......
1901,	3	26.7	—1.1	+5.4
CHENILLE GOODS.				
1896,	3	27.5	......	......
1897,	3	29.5	+2.0	......
1898,	3	28.9	—.6	......

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	production. Relative per cent. wages to value of	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CHENILLE GOODS—Continued.				
1899,	3	30.6	+1.7	......
1900,	3	34.6	+4.0	......
1901,	3	34.2	—.4	+6.7
UPHOLSTERY GOODS.				
1896,	10	25.2	......	......
1897	10	26.7	+1.5	......
1898,	10	27.3	+.6	......
1899,	10	26.2	—1.1	......
1900,	10	26.7	+.5	......
1901,	10	27.4	+.7	+2.2
KNIT GOODS, UNDERWEAR.				
1896,	13	20.6	......	......
1897,	13	20.2	—.4	......
1898,	13	19.6	—.6	......
1899,	13	20.5	+.9	......
1900,	13	18.7	—1.8	......
1901,	13	19.4	+.7	—1.2
HOSIERY.				
1896,	31	30.2	......	......
1897,	31	30.5	+.3	......
1898,	31	30.4	—.1	......
1899,	31	30.7	+.3	......
1900,	31	30.9	+.2	......
1901,	31	30.8	—.1	+.6

RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—Continued.

COMPARISON OF RELATIVE PER CENT. OF WAGES TO VALUE OF PRODUCTION—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Relative per cent. wages to value of production.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
SILK—BROAD GOODS, THROWN SILK, YARNS, ETC.				
1896,	6	16.9	......	......
1897,	6	16.6	—.3	......
1898,	6	16.3	—.3	......
1899,	6	13.9	—2.4	......
1900,	6	14.2	+.3	......
1901,	6	15.6	+1.4	—1.3
SILK—BROAD GOODS AND RIBBONS.				
1896,	2	22.4	......	......
1897,	2	20.1	—2.3	......
1898,	2	17.8	—2.3	......
1899,	2	16.8	—1.0	......
1900,	2	16.7	—.1	......
1901,	2	16.9	+.2	—5.5
SILK—RIBBONS.				
1896,	4	17.8	......	......
1897,	4	20.9	+3.1	......
1898,	4	20.0	—.9	......
1899,	4	21.0	+1.0	......
1900,	4	20.2	—.8	......
1901,	4	22.1	+1.9	+4.3

PRODUCTION IN TONS OR QUANTITY.

COMPARISON OF AGGREGATE TOTAL PRODUCTION, IN TONS, OR GIVEN QUANTITY—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

NOTE...In this table the aggregate production, in tons or quantity, by the same establishments for the years 1896, 1897, 1898, 1899, 1900 and 1901 is presented, with the relative increase or decrease, together with the increase or decrease 1901 over 1896. Eighty-eight industries, representing 801 establishments, are considered.

Character of Industry and Years.	Number of establishments considered.	Total production in tons or given quantity.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
STEEL CASTINGS.				
		Tons.		
1896,	7	17,362	....	....
1897,	7	18,313	+951	....
1898,	7	27,786	+9,473	....
1899,	7	34,845	+7,059	....
1900,	7	33,231	—1,614	....
1901,	7	30,501	—2,730	+13,139
STEEL BILLETS, SLABS, BLOOMS, ETC.				
1896,	4	429,553	....	....
1897,	4	674,744	+245,191	....
1898,	4	722,475	+47,731	....
1899,	4	842,183	+119,708	....
1900,	4	675,994	—166,189	....
1901,	4	863,499	+187,505	+433,946
TOOL STEEL.				
1896,	3	1,286	....	....
1897,	3	694	—592	....
1898,	3	1,086	+392	....
1899,	3	1,295	+209	....

PRODUCTION IN TONS OR QUANTITY—Continued.

COMPARISON OF AGGREGATE TOTAL PRODUCTION, IN TONS, OR GIVEN QUANTITY—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total production in tons or given quantity.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
TOOL STEEL—Continued.				
		Tons.		
1900,	3	1,667	+372	....
1901,	3	2,424	+757	+1,138
IRON AND STEEL FORGINGS.				
1896,	7	4,110	....	....
1897,	7	3,553	—557	....
1898,	7	6,866	+3,313	....
1899,	7	9,813	+2,947	....
1900,	7	9,159	—654	....
1901,	7	9,401	+242	+5,291
IRON SPECIALTIES.				
1896,	2	1,209	....	....
1897,	2	2,510	+1,301	....
1898,	2	1,061	—1,449	....
1899,	2	913	—148	....
1900,	2	1,017	+104	....
1901,	2	1,265	+248	+56
MALLEABLE IRON.				
1896,	4	30,888	....	....
1897,	4	27,466	—3,422	....
1898,	4	38,228	+10,762	....
1899,	4	44,852	+6,624	....
1900,	4	38,963	—5,889	....
1901,	4	33,182	—5,781	+2,294

PRODUCTION IN TONS OR QUANTITY—Continued.

COMPARISON OF AGGREGATE TOTAL PRODUCTION, IN TONS, OR GIVEN QUANTITY—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total production in tons or given quantity.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WIRE NAILS AND RIVETS.				
		Tons.		
1896,	4	20,831	....	....
1897,	4	43,831	+23,000	....
1898,	4	33,170	—10,661	....
1899,	4	37,245	+4,075	....
1900,	4	22,514	—14,731	....
1901,	4	15,159	—7,355	—5,672
TACKS AND SMALL NAILS.				
1896,	4	1,357	....	....
1897,	4	1,474	+117	....
1898,	4	1,243	—231	....
1899,	4	2,287	+1,044	....
1900,	4	1,975	—312	....
1901,	4	2,311	+336	+954
WIRE.				
1896,	5	3,323	....	....
1897,	5	3,531	+208	....
1898,	5	3,731	+200	....
1899,	5	4,024	+293	....
1900,	5	3,944	—80	....
1901,	5	4,889	+945	+1,566
WIRE ROPE.				
1896,	2	3,406	....	....
1897,	2	3,420	+14	....

PRODUCTION IN TONS OR QUANTITY—Continued.

COMPARISON OF AGGREGATE TOTAL PRODUCTION, IN TONS, OR GIVEN QUANTITY—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total production in tons or given quantity.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WIRE ROPE—Continued.				
		Tons.		
1898,	2	3,749	+329	....
1899,	2	4,880	+1,131	....
1900,	2	6,443	+1,563	....
1901,	2	6,707	+264	+3,301
WROUGHT IRON PIPE AND TUBES.				
1896,	5	281,068	....	....
1897,	5	297,601	+16,533	....
1898,	5	358,304	+60,703	....
1899,	5	452,513	+94,209	....
1900,	5	295,574	—156,939	....
1901,	5	410,878	+115,304	+129,810
CAST IRON PIPE.				
1896,	3	50,730	....	....
1897,	3	72,030	+21,300	....
1898,	3	79,212	+7,182	....
1899,	3	61,344	—17,868	....
1900,	3	74,456	+13,112	....
1901,	3	78,122	+3,666	+27,392
IRON AND STEEL BRIDGES.				
1896,	7	58,396	....	....
1897,	7	54,013	—4,383	....
1898,	7	73,781	+19,768	....

PRODUCTION IN TONS OR QUANTITY—Continued.

COMPARISON OF AGGREGATE TOTAL PRODUCTION, IN TONS, OR GIVEN QUANTITY—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total production in tons or given quantity.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
IRON AND STEEL BRIDGES—Continued.				
		Tons.		
1899,	7	81,970	+8,189	....
1900,	7	134,231	+52,261	....
1901,	7	108,276	—25,955	+49,880
IRON CHAINS.				
1896,	5	4,877	....	....
1897,	5	4,898	+21	....
1898,	5	6,307	+1,409	....
1899,	5	6,745	+439	....
1900,	5	6,597	—148	....
1901,	5	5,956	—641	+1,079
PAPER MANUFACTORIES.				
1896,	8	63,953	....	....
1897,	8	59,852	—4,101	....
1898,	8	55,014	—4,838	....
1899,	8	67,929	+12,915	....
1900,	8	71,184	+3,255	....
1901,	8	71,878	+694	+7,925
WALL PAPER.				
		Rolls.		
1896,	4	19,002,000	....	....
1897,	4	23,748,793	+4,746,793	....
1898,	4	28,867,977	+5,119,184	....
1899,	4	27,458,252	—1,409,725	....

PRODUCTION IN TONS OR QUANTITY—Continued.

COMPARISON OF AGGREGATE TOTAL PRODUCTION, IN TONS, OR GIVEN QUANTITY—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total production in tons or given quantity.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
WALL PAPER—Continued.				
		Rolls.		
1900,	4	26,114,145	—1,344,107	....
1901,	4	29,930,030	+3,815,885	+10,928,030
CIGARS.				
		Cigars.		
1896,	46	308,825,191	....	....
1897,	46	364,270,636	+55,444,445	....
1898,	46	362,674,423	—1,596,213	....
1899,	46	396,987,894	+34,313,471	....
1900,	46	420,548,723	+23,560,829	....
1901,	46	400,893,737	—19,654,986	+92,068,546
BUILDING BRICK.				
		Bricks.		
1896,	35	223,749,969	....	....
1897,	35	214,165,868	—9,584,101	....
1898,	35	238,084,927	+23,919,059	....
1899,	35	238,429,295	—655,632	....
1900,	35	223,155,408	—15,273,887	....
1901,	35	213,696,165	—9,459,243	—10,053,804
FIRE BRICK.				
		Tons.		
1896,	18	329,925	....	....
1897,	18	330,914	+989	....
1898,	18	408,796	+77,882	....
1899,	18	538,099	+129,303	....

PRODUCTION IN TONS OR QUANTITY—Continued.

COMPARISON OF AGGREGATE TOTAL PRODUCTION, IN TONS, OR GIVEN QUANTITY—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total production in tons or given quantity.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
FIRE BRICK—Continued.				
		Tons.		
1900,	18	666,863	+128,764	....
1901,	18	693,977	+27,114	+364,052
SLATE ROOFING, ETC., TONNAGE.				
1896,	6	33,936	....	....
1897,	6	43,595	+9,659	....
1898,	6	37,109	—6,486	....
1899,	6	35,560	—1,549	....
1900,	6	59,951	+24,391	....
1901,	6	68,902	+8,951	+34,966
SLATE ROOFING, ETC., SQUARES.				
		Squares.		
1896,	14	180,098	....	....
1897,	14	223,844	+43,746	....
1898,	14	273,928	+50,084	....
1899,	14	287,826	+13,898	....
1900,	14	265,796	—22,030	....
1901,	14	286,526	+20,730	+106,428
GLAZED AND CHROME KID.				
		Dozens.		
1896,	7	887,242	....	....
1897,	7	1,139,807	+252,565	....
1898,	7	1,332,785	+192,978	....
1899,	7	1,688,109	+355,324	....

PRODUCTION IN TONS OR QUANTITY—Continued.

COMPARISON OF AGGREGATE TOTAL PRODUCTION, IN TONS, OR GIVEN QUANTITY—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total production in tons or given quantity.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
GLAZED AND CHROME KID—Continued.				
		Dozens.		
1900,	7	1,487,228	—200,881	....
1901,	7	1,851,886	+364,658	+964,644
MEN'S, WOMEN'S, MISSES AND CHILDREN'S SHOES.				
		Pairs.		
1896,	15	3,542,637	....	....
1897,	15	3,855,618	+312,981	....
1898,	15	3,739,548	—116,070	....
1899,	15	4,137,680	+398,132	....
1900,	15	3,935,684	—201,996	....
1901,	15	3,914,210	—21,474	+371,573
SUSPENDERS.				
		Dozens.		
1896,	2	142,000	....	....
1897,	2	152,000	+10,000	....
1898,	2	165,000	+13,000	....
1899,	2	180,500	+15,500	....
1900,	2	266,000	+85,500	....
1901,	2	450,000	+184,000	+308,000
HATS AND CAPS.				
1896,	3	65,867	....	....
1897,	3	103,934	+38,067	....
1898,	3	100,663	—3,271	....
1899,	3	96,229	—4 434	....

PRODUCTION IN TONS OR QUANTITY—Continued.

COMPARISON OF AGGREGATE TOTAL PRODUCTION, IN TONS, OR GIVEN QUANTITY—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total production in tons or given quantity.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
HATS AND CAPS—Continued.				
		Dozens.		
1900,	3	111,091	+14,862	....
1901,	3	139,964	+28,873	+74,097
FUR AND FELT HATS.				
1896,	4	47,026	....	....
1897,	4	51,025	+3,999	....
1898,	4	55,925	+4,900	....
1899,	4	64,127	+8,202	....
1900,	4	78,437	+14,310	....
1901,	4	90,025	+11,588	+42,999
WOOL HATS.				
1896,	7	171,988	....	....
1897,	7	195,956	+23,968	....
1898,	7	201,718	+5,762	....
1899,	7	208,122	+6,404	....
1901,	7	271,322	+63,200	....
1902,	7	241,180	—30,142	+69,192
UMBRELLAS AND PARASOLS.				
		Pieces.		
1896,	4	825,571	....	....
1897,	4	889,043	+63,472	....
1898,	4	889,252	+209	....
1899,	4	942,826	+53,574	....
1900,	4	865,998	—76,828	....
1901,	4	979,913	+113,915	+154,342

PRODUCTION IN TONS OR QUANTITY—Continued.

COMPARISON OF AGGREGATE TOTAL PRODUCTION, IN TONS, OR GIVEN QUANTITY—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total production in tons or given quantity.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
SHIRTS AND SHIRT WAISTS.				
		Dozens.		
1896,	9	196,648	....	....
1897,	9	190,793	—5,855	....
1898,	9	337,213	+146,420	....
1899,	9	393,622	+56,409	....
1900,	9	398,536	+4,914	....
1901,	9	389,018	—9,518	+192,370
CARPETS.				
		Yards.		
1896,	17	10,752,952	....	....
1897,	17	13,612,975	+2,860,023	....
1898,	17	12,904,587	—708,388	....
1899,	17	15,648,813	+2,744,226	....
1900,	17	13,510,867	—2,137,946	....
1901,	17	14,978,827	+1,467,960	+4,225,875
WOOLEN AND WORSTED YARNS.				
		Pounds.		
1896,	12	9,334,353	....	....
1897,	12	13,427,749	+4,093,396	....
1898,	12	9,307,876	—4,119,873	....
1899,	12	9,705,579	+397,703	....
1900,	12	9,383,095	—322,484	....
1901,	12	9,156,971	—226,124	—177,382

PRODUCTION IN TONS OR QUANTITY—Continued.

COMPARISON OF AGGREGATE TOTAL PRODUCTION, IN TONS, OR GIVEN QUANTITY—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total production in tons or given quantity.	Increase (+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease (—) 1901 as compared with 1896.
CARPET YARNS.		Pounds.		
1896,	11	10,789,500	....	....
1897,	11	13,882,000	+3,092,500	....
1898,	11	11,499,606	—2,382,394	....
1899,	11	15,271,761	+3,772,155	....
1900,	11	14,337,344	—934,417	....
1901,	11	14,603,056	+265,712	+3,813,556
COTTON YARNS.				
1896,	7	7,753,685	....	....
1897,	7	8,278,160	+524,475	....
1898,	7	9,070,922	+792,762	....
1899,	7	9,278,304	+207,382	....
1900,	7	8,941,662	—336,642	....
1901,	7	7,935,951	—1,005,711	+182,266
WORSTED WOOLEN AND COTTON YARNS.				
1896,	10	6,127,333	....	....
1897,	10	7,316,935	+1,189,602	....
1898,	10	6,546,001	—770,934	....
1899,	10	7,375,619	+829,618	....
1900,	10	7,076,277	—299,342	....
1901,	10	7,151,220	+74,943	+1,023,887
HOSIERY.		Dozens.		
1896,	31	4,463,537	....	....
1897,	31	5,366,913	+903,376	....

PRODUCTION IN TONS OR QUANTITY—Continued.

COMPARISON OF AGGREGATE TOTAL PRODUCTION, IN TONS, OR GIVEN QUANTITY—SAME ESTABLISHMENTS, FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Character of Industry and Years.	Number of establishments considered.	Total production in tons or given quantity.	Increase(+) or decrease (—) as compared with the preceding year.	Increase (+) or decrease(—) 1901 as compared with 1896.
HOSIERY—Continued.				
		Dozens.		
1898,	31	7,181,631	+1,814,718	....
1899,	31	5,934,516	—1,247,115	....
1900,	31	5,939,122	+4,606	....
1901,	31	6,166,032	+226,910	+1,702,495
SILK—BROAD GOODS AND RIBBONS.				
		Yards.		
1896,	2	2,126,571	....	....
1897,	2	3,304,064	+1,177,493	....
1898,	2	3,712,633	+408,569	....
1899,	2	5,668,697	+1,956,064	....
1900,	2	6,388,130	+719,433	....
1901,	2	3,163,175	—3,224,955	+1,036,604
SILK—RIBBONS.				
1896,	4	10,319,945	....	....
1897,	4	9,934,072	—385,873	....
1898,	4	13,346,776	+3,412,704	....
1899,	4	15,984,362	+2,637,586	....
1900,	4	15,209,686	—774,676	....
1901,	4	23,694,069	+8,484,383	+13,374,124

YEAR 1896.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
1.	Steel castings,	7	$5,744,982	$418,609	290	1,016
2.	Steel billets, slabs, blooms, etc.,	4	13,137,175	5,724,832	204	1,392
3.	Tool steel, etc.,	3	480,000	146,601	267	160
4.	Iron and steel forgings,	7	431,000	141,286	256	254
5.	Iron specialties,	2	35,000	47,113	301	37
6.	Malleable iron,	4	440,000	590,308	292	1,575
7.	Bolts, nuts, etc.,	8	1,885,950	600,739	235	942
8.	Wire nails, rivets, etc.,	4	1,005,000	521,603	241	499
9.	Tacks and small nails,	4	163,500	48,253	226	118
10.	Wire,	5	480,000	118,055	285	97
11.	Wire rope,	2	690,000	292,275	302	158
12.	Wire goods,	5	150,950	45,611	296	194
13.	Wagon and carriage axles and springs,	6	594,475	170,988	254	353
14.	Scales, etc.,	4	166,000	79,428	276	113
15.	Stoves, ranges, heaters, etc.,	37	5,457,362	843,414	209	3,447
16.	Bath boilers, tanks, etc.,	2	52,820	33,394	309	26
17.	Hardware specialties,	14	3,077,418	637,416	260	2,509
18.	Edge tools,	12	1,675,197	453,478	246	818
19.	Wrenches, picks, etc.,	5	564,000	118,234	240	248
20.	Locomotives and cars built and repaired,	3	1,461,400	3,738,754	273	6,254
21.	Wrought iron pipe and tubes,	5	13,555,000	7,973,945	283	5,324
22.	Cast iron pipes,	3	340,000	573,580	303	507
23.	Brass, copper and bronze goods,	19	1,853,192	1,142,796	295	1,210
24.	Iron and steel bridges,	7	961,050	2,008,501	294	1,169
25.	Locomotives, stationary engines, etc.,	9	11,222,730	4,229,510	306	5,587
26.	Engines, boilers, etc.,	10	3,908,988	1,557,093	295	1,922
27.	Cars, springs, axles and railway supplies,	12	6,310,325	2,270,778	260	2,240
28.	Iron vessels and engines,	3	7,039,973	1,923,035	306	4,044
29.	Boilers, tanks, stacks, etc.,	21	1,544,562	761,415	286	1,161

YEAR 1896.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earn-	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
$463,012	$1,496,055	$1,472 49	$455 72	$1 57	27.9	30.9	17,362 tons.	1
621,895	7,149,210	5,135,93	446 83	2 19	80.0	8.7	429,553	2
88,646	433,801	2,711 26	554 04	2 08	33.8	20.4	1,286	3
121,567	366,163	1,047 89	478 61	1 87	38.6	33.2	4,110	4
17,700	77,966	2,107 19	478 38	1 59	60.4	22.8	1,209	5
709,933	1,933,107	1,227 37	450 75	1 54	30.5	36.7	30,888	6
361,981	1,269,306	1,347 46	384 27	1 64	47.3	28.5	....	7
158,859	924,754	1,853,21	318 35	1 32	56.4	17.2	20,831	8
34,122	115,749	980 92	289 18	1 28	41.7	29.5	1,357	9
44,882	228,163	2,352 20	462 70	1 62	51.7	19.7	3,323	10
70,108	615,004	3,892 43	443 72	1 47	47.5	11.4	3,406	11
56,708	217,040	1,118 66	292 31	99	21.0	26.1	....	12
171,015	544,482	1,542 44	484 46	1 90	31.4	31.4	....	13
66,550	233,592	2,067 18	588 94	2 13	34.0	28.5	....	14
1,626,876	4,111,827	1,192 84	471 97	2 26	20.5	39.6	....	15
12,091	61,186	2,353 31	465 04	1 50	54.6	19.8	....	16
1,004,650	2,382,624	949 63	400 42	1 54	26.8	42.2	....	17
356,401	1,083,068	1,324 04	435 70	1 77	41.9	32.9	....	18
106,369	363,054	1,463 93	428 91	1 79	32.5	29.3	....	19
3,035,897	6,983,962	1,116 72	485 43	1 78	54.2	43.4	....	20
2,170,688	11,907,420	2,236 50	407 72	1 44	66.9	18.2	281,068	21
209,338	862,648	1,701 48	412 89	1 37	66.5	24.3	50,730	22
496,402	2,218,718	1,833 65	410 25	1 39	51.5	22.4	....	23
590,081	3,429,136	2,933 39	504 77	1 72	58.5	17.2	58,396	24
3,137,295	8,792,061	1,573 66	561 53	1 84	48.1	35.6	....	25
1,003,538	3,230,705	1,680 91	522 13	1 77	48.2	31.6	....	26
971,616	4,603,466	2,055 12	433 75	1 67	49.3	21.1	....	27
2,320,747	4,991,255	1,234 24	573 87	1 88	38.5	46.5	....	28
542,277	1,951,211	1,680 63	467 08	1 63	39.0	27.8	....	29

YEAR 1896.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
30.	Machinery, ...	21	8,798,408	1,741,304	301	3,721
31.	Foundries and machine shops,	25	3,041,550	875,986	286	2,127
32.	Files, etc., ...	2	510,000	95,440	275	331
33.	Saws, ...	3	310,000	37,000	229	56
34.	Plumbers' supplies, ...	3	2,105,078	*	281	960
35.	Electrical supplies, ...	4	12,815,696	1,337,362	289	2,528
36.	Shovels, spades, scoops, etc.,	8	651,100	313,871	210	545
37.	Safes and vault doors, ...	2	80,000	66,274	307	128
38.	Metal and metallic goods, ...	3	280,400	47,136	234	194
39.	Building and structural iron work, ...	2	823,000	522,584	301	752
40.	Iron chains, ...	5	253,542	127,022	264	231
41.	Iron fences and railings, ...	7	40,500	47,937	293	79
42.	Agricultural implements, ...	12	905,000	1,025,789	287	1,295
43.	Steam pumps, ...	2	280,000	146,725	307	153
44.	Bicycles, ...	3	200,000	364,789	268	222
45.	Pianos and organs, ...	2	51,000	32,563	271	80
46.	Tinware, ...	5	372,700	218,233	301	284
47.	Paper manufactories, ...	8	4,257,961	1,583,061	262	1,521
48.	Wall paper, ...	4	310,000	420,913	258	362
49.	Cigars, ...	46	2,805,477	2,703,269	287	6,559
50.	Book binding, ...	3	125,000	62,699	301	138
51.	Cordage, ropes, twine, etc.,	5	3,260,000	3,362,991	288	2,055
52.	Paper, paper boxes, envelopes, etc., ...	27	1,491,067	936,025	297	1,826
53.	Pottery, ...	2	510,000	68,215	302	146
54.	Paving brick, ...	7	481,200	32,949	255	437
55.	Building brick, ...	35	3,630,700	174,412	229	1,939
56.	Fire brick, ...	18	2,240,600	423,138	283	1,868
57.	Slate roofing, etc., tonnage,..	6	1,021,451	32,540	229	839
58.	Slate roofing, etc., squares,...	14	511,916	55,722	238	1,254
59.	Window glass, bottles, and table goods, ...	22	13,439,300	1,511,890	240	7,119
60.	Glazed and chrome kid, ...	7	3,857,983	5,635,016	299	2,725

YEAR 1896.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
1,955,967	5,397,999	1,450 69	525 65	1 75	32.4	36.2	....	30
957,628	2,643,208	1,242 69	450 22	1 57	33.1	36.2	....	31
108,895	321,222	970 46	328 99	1 20	29.7	33.9	....	32
25,745	88,186	1,574 75	459 73	2 01	42.0	29.0	....	33
418,864	1,078.000	1,122 92	426 32	1 55	....	38.9	....	34
1,276,087	3,653,461	1,445 20	504 78	1 75	36.6	34.9	....	35
217.581	813,573	1,492 80	399 23	1 90	38.6	26.8	....	36
54,556	151,546	1,183 95	426 22	1 39	43.7	36.0	....	37
58,892	161,989	834 99	303 56	1 29	29.1	36.3	....	38
382,148	1,195,156	1,589 30	508 18	1 60	43.8	32.0	....	39
92,526	331,059	1,433 15	396 22	1 50	38.4	27.7	4,877 tons.	40
37,512	119,501	1,512 67	474 84	1 62	40.1	31.4	....	41
575,390	2,251,507	1,738 62	444 32	1 55	45.6	25.6	....	42
121,368	334,056	2.183 31	793 26	2 58	43.9	36.3	....	43
117,134	606,001	2,729 23	527 63	1 91	60.2	19.3	....	44
33,894	94,327	1,179 09	423 67	1 56	34.5	35.9	....	45
107,539	477,000	1,679 57	378 66	1 26	45.8	22.5	....	46
580,874	3,370,998	2,216 30	381 90	1 46	47.0	17.2	63,953	47
116,068	844,811	2,333 73	320 63	1 24	49.8	13.7	19,002,000 rolls.	48
1,813,388	7,138,707	1,088 40	276 47	96	37.9	25.4	308,825,191 cigars.	49
64,957	167,856	1,216 35	470 70	1 56	37.3	38.7	....	50
618,977	4,777,490	2,324 81	301 21	1 05	70.4	13.0	....	51
494,654	2,009,846	1,100 68	270 89	91	46.6	24.1	....	52
72,562	206,732	1,415 97	497 00	1 64	32.9	35.1	....	53
142,710	333,078	762 19	326 54	1 28	9.9	42.9	25,269,988 brick.	54
662,481	1,569,682	809 53	341 66	1 49	11.1	42.2	223,749,969 brick.	55
727,162	1,639,926	877 90	389 26	1 37	25.8	44.3	329,925 tons.	56
251,993	390,376	470 33	303 61	1 33	8.3	64.5	33,936 tons.	57
397,384	590,366	470 79	316 89	1 33	9.4	67.3	180,098 squares.	58
2,690,298	5,991,102	842 63	378 38	1 58	25.2	44.9	....	59
962,342	8.049.657	2,954 00	353 15	1 18	70.0	11.9	887,242 dozen.	60

YEAR 1896.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
61.	Men's, women's, misses and children's shoes, ...	15	2,193,113	2,853,067	281	3,401
62.	Suspenders, ...	2	82,000	200,986	295	110
63.	Hats and caps, ...	3	273,592	284,490	284	490
64.	Fur and felt hats, ...	4	2,773,726	443,621	307	963
65.	Wool hats, ...	7	338,997	270,432	274	395
66.	Umbrellas and parasols, ...	4	407,435	656,219	307	589
67.	Dress trimmings, braids, etc.,	8	1,158,296	536,719	287	1,104
68.	Shirts and shirt waists, ...	9	905,500	984,847	286	1,804
69.	Neckwear, ...	3	135,000	217,642	308	190
70.	Cotton and woolen cloths, ..	24	3,313,847	2,904,386	269	4,463
71.	Carpets, ...	17	3,150,625	2,131,394	264	2,263
72.	Cotton goods, ...	16	2,767,649	1,442,767	262	2,807
73.	Woolen and worsted cassimeres, ...	11	1,297,633	1,034,784	270	1,373
74.	Woolen and worsted fabrics,	16	2,969,836	2,037,245	247	2,783
75.	Woolen and worsted yarn, ..	12	2,669,270	1,211,445	248	1,526
76.	Rugs, yarns, etc., ...	5	5,360,733	1,954,855	256	3,134
77.	Carpet yarns, ...	11	953,500	839,240	265	563
78.	Cotton yarns, ...	7	1,240,209	760,547	265	695
79.	Worsted, woolen and cotton yarns, ...	10	2,205,274	1,370,289	245	1,634
80.	Woolen blankets, flannels, etc., ...	5	669,730	620,465	304	717
81.	Lace goods	3	741,000	190,499	274	763
82.	Chenille goods, ...	3	470,000	297,395	279	610
83.	Upholstery goods, ...	10	1,857,322	1,427,820	294	1,938
84.	Knit goods, underwear, ...	13	1,750,000	1,759,305	271	2,333
85.	Hosiery, ...	31	1,997,318	1,626,945	256	4,757
86.	Silk, broad goods, thrown-silk, yarns, etc., ...	6	1,574,700	2,331,078	275	2,294
87.	Silk, broad goods and ribbons, ...	2	1,650,000	700,000	301	1,300
88.	Silk—Ribbons, ...	4	311,882	309,883	298	431
	Total, ...	801	$200,109,865	$92,612,814	270	131,260

YEAR 1896.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
1,173,935	5,055,796	1,486 56	345 17	1 23	56.4	23.2	3,542,637 pairs.	61
30,936	319,100	2,900 91	281 24	95	63.0	9.7	142,000 dozen.	62
121,160	525,607	1,285 10	296 23	1 22	54.1	23.1	65,867 dozen.	63
385,170	1,447,818	1,503 45	299 97	1 30	30.6	26.6	47,026 dozen.	64
125,792	521,966	1,321 43	318 46	1 16	51.8	24.1	171,988 dozen.	65
136,441	1,109,989	1,884 53	231 65	75	59.1	12.3	825,571 pieces.	66
299,043	1,218,500	1,103 71	270 87	94	44.0	24.5	....	67
527,371	2,105,007	1,166 85	292 33	1 02	46.8	25.1	196,648 dozen.	68
72,910	381,745	2,009 18	383 74	1 25	57.0	19.1	....	69
1,418,449	5,444,181	1,219 85	317 82	1 18	53.3	26.1	....	70
784,416	3,632,760	1,605 29	346 63	1 31	58.7	21.6	10,752,952 yards.	71
794,137	2,680,912	955 08	282 91	1 08	53.8	29.6	....	72
419,961	1,970,251	1,435 00	305 88	1 13	52.5	21.3	....	73
788,163	3,821,846	1,373 28	283 21	1 14	53.3	20.6	....	74
411,043	2,012,851	1,319 04	269 36	1 09	60.2	20.4	9,334,353 pounds.	75
1,011,165	4,087,237	1,304 16	322 64	1 25	47.8	24.7	....	76
189,053	1,213,783	2,155 92	335 80	1 27	69.1	15.6	10,789,500 pounds.	77
188,970	1,137,430	1,636 59	271 90	1 03	66.9	16.6	7,753,685 pounds.	78
462,651	2,304,716	1,410 47	283 14	1 16	59.5	20.1	6,127,333 pounds.	79
257,057	1,282,412	1,788 58	358 52	1 18	48.4	20.0	....	80
193,765	909,289	1,191 73	253 95	93	20.9	21.3	....	81
138,438	502,678	824 06	226 95	81	59.2	27.5	....	82
674,424	2,674,368	1,379 90	348 00	1 18	53.4	25.2	....	83
611,923	2,978,552	1,276 70	262 29	97	59.1	20.6	....	84
1,130,215	3,744,935	787 25	237 59	93	43.4	30.2	4,463,537 dozens.	85
579,144	3,423,925	1,492 56	252 46	92	68.1	16.9	....	86
325,323	1,450,181	1,115 52	250 25	83	48.3	22.4	2,176,571 yards.	87
125,802	705,120	1,636 01	291 88	98	43.9	17.8	10,319,945 yards.	88
$50,084,768	$188,038,106	$1,432 56	$381 56	$1 41	49.2	26.6	....	

YEAR 1897.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
1.	Steel castings,	7	$5,316,197	$402,115	310	1,068
2.	Steel billets, slabs, blooms, etc.,	4	13,218,900	7,363,930	291	1,278
3.	Tool steel, etc.,	3	608,000	74,610	242	159
4.	Iron and steel forgings,	7	430,000	122,710	281	244
5.	Iron specialties,	2	45,000	77,228	301	45
6.	Malleable iron,	4	493,925	455,890	292	1,404
7.	Bolts, nuts, etc.,	8	1,918,214	591,791	262	966
8.	Wire nails, rivets, etc.,	4	1,015,000	884,350	250	644
9.	Tacks and small nails,	4	163,500	40,862	209	114
10.	Wire,	5	482,100	108,939	265	105
11.	Wire rope,	2	700,000	230,111	303	166
12.	Wire goods,	5	154,450	58,563	300	215
13.	Wagon and carriage axles and springs	6	594,475	167,911	276	353
14.	Scales, etc.,	4	171,000	83,826	285	122
15.	Stoves, ranges, heaters, etc.,	37	5,520,359	843,713	228	3,543
16.	Bath boilers, tanks, etc.,	2	54,000	31,163	305	28
17.	Hardware specialties,	14	3,246,189	668,089	270	2,643
18.	Edge tools,	12	1,613,064	223,034	227	827
19.	Wrenches, picks, etc.,	5	571,000	152,785	266	293
20.	Locomotives and cars built and repaired,	3	1,464,400	3,276,309	282	5,742
21.	Wrought iron pipe and tubes,	5	13,505,000	7,101,673	298	5,110
22.	Cast iron pipe,	3	613,059	767,967	302	615
23.	Brass, copper and bronze goods,	19	1,845,192	1,117,888	294	1,185
24.	Iron and steel bridges,	7	961,050	1,731,721	298	1,177
25.	Locomotives, stationery engines, etc.,	9	11,643,157	3,933,971	306	5,651
26.	Engines, boilers, etc.,	10	3,924,988	1,325,287	294	1,690
27.	Cars, springs, axles and railway supplies,	12	5,840,116	1,938,862	280	2,306
28.	Iron vessels and engines,	3	7,274,993	2,020,859	305	3,447
29.	Boilers, tanks, stacks, etc.,	21	1,624,265	863,908	285	1,128

YEAR 1897.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
$478,303	$1,391,020	$1,302 45	$447 85	$1 44	28.9	34.4	18,313 tons.	1
630,474	10,511,198	8,224 72	493 33	1 70	70.0	6.0	674,744 tons.	2
74,319	270,029	1,698 30	467 42	1 93	27.6	27.5	694 tons.	3
120,823	315,364	1,292 28	495 18	1 76	38.9	38.3	3,553 tons.	4
22,700	119,167	2,648 16	504 44	1 68	64.8	19.1	2,510 tons.	5
647,054	1,627,267	1,159 02	460 86	1 58	28.0	39.8	27,466 tons.	6
308,126	1,221,990	1,265 00	318 97	1 22	48.4	25.2	....	7
247,270	1,494,842	2,321 18	383 96	1 54	59.2	16.5	43,831 tons.	8
31,752	107,112	939 58	278 53	1 33	38.1	29.6	1,474 tons.	9
39,962	222,399	2,118 09	380 59	1 44	49.0	18.0	3,531	10
74,810	596,192	3,591 52	450 67	1 49	38.6	12.5	3,420 tons.	11
66,854	259,311	1,206 10	310 95	1 03	22.6	25.8	....	12
179,198	554,784	1,571 68	507 64	1 84	30.3	32.3	....	13
69,185	249,765	2,047 25	567 09	1 99	33.6	27.7	....	14
1,647,548	4,177,453	1,179 07	465 01	2 04	20.2	39.4	....	15
12,498	63,699	2,274 97	446 36	1 46	48.9	19.6	....	16
1,053,746	2,686,482	1,016 45	398 69	1 48	24.9	39.2	....	17
304,988	781,832	945 38	368 79	1 62	28.5	39.0	....	18
123,034	462,043	1,576 94	419 91	1 58	33.0	26.6	....	19
3,019,356	6,534,498	1,138 02	524 84	1 86	50.2	46.2	....	20
2,045,620	11,341,565	2,219 49	400 32	1 34	62.6	18.0	297,601 tons.	21
250,934	1,184,240	1,952 59	408 02	1 35	64.8	21.2	72,030 tons.	22
482,438	2,001,110	1,688 07	407 11	1 38	55.9	24.1	....	23
564,817	3,115,371	2,646 87	479 88	1 61	55.6	18.1	54,013 tons.	24
3,032,837	8,531,117	1,509 67	536 69	1 75	46.1	35.6	....	25
840,896	2,658,616	1,573 15	497 57	1 69	49.9	31.6	....	26
928,180	4,359,164	1,890 35	402 51	1 44	44.5	21.3	....	27
1,881,993	4,588,448	1,331 14	545 98	1 79	44.0	41.0	....	28
535,025	1,904,346	1,688 25	474 32	1 66	45.4	28.1	....	29

YEAR 1897.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
30.	Machinery,	21	$8,921,924	$1,698,519	309	3,853
31.	Foundries and machine shops,	25	3,062,486	1,049,859	295	2,101
32.	Files, etc.,	2	510,000	92,201	266	346
33.	Saws,	3	335,000	26,812	210	50
34.	Plumbers' supplies,	3	2,043,751	*	269	921
35.	Electrical supplies,	4	12,848,743	1,365,199	297	2,173
36.	Shovels, spades, scoops, etc.,	8	651,100	276,019	219	511
37.	Safes and vault doors,	2	68,000	63,173	301	125
38.	Metal and metallic goods,	3	280,400	50,060	258	207
39.	Building and structural iron work,	2	823,000	686,899	302	662
40.	Iron chains,	5	258,542	126,244	272	231
41.	Iron fences and railings,	7	42,500	58,623	298	100
42.	Agricultural implements,	12	1,907,000	1,027 645	293	1,322
43.	Steam pumps,	2	376,974	127,524	307	140
44.	Bicycles,	3	253,000	461,607	280	255
45.	Pianos and organs,	2	51,000	37,083	292	77
46.	Tinware,	5	374,000	216,243	301	275
47.	Paper manufactories,	8	4,425,013	1,451,820	277	1,474
48.	Wall paper,	4	395,000	499,158	283	381
49.	Cigars,	46	3,025,250	3,274,003	291	7,301
50.	Book binding,	3	126,500	62,018	280	137
51.	Cordage, ropes, twine, etc.,	5	3,260,000	3,484,048	317	2,119
52.	Paper, paper boxes, envelopes, etc.,	27	1,504,284	967,556	301	1,911
53.	Pottery,	2	560,000	56,290	287	145
54.	Paving brick,	7	521,500	25,156	247	429
55.	Building brick,	35	3,661,347	170,107	227	1,852
56.	Fire brick,	18	2,421,783	382,434	281	1,928
57.	Slate roofing, etc., tonnage,	6	1,041,800	36,721	226	830
58.	Slate roofing, etc., squares,	14	513,914	66,448	239	1,354
59.	Window glass, bottles, and table goods,	22	13,454,382	1,623,801	263	7,151
60.	Glazed and chrome kid,	7	4,068,915	7,036,904	301	3,255
61.	Men's, women's, misses and children's shoes,	15	2,254,701	3,085,003	292	3,514

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*Incomplete returns of value of basic materials.

YEAR 1897.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
$1,970,570	$5,451,809	$1,414 95	$511 44	$1 66	31.2	36.1	....	30
995,718	2,965,528	1,411 48	473 93	1 61	35.4	33.6	....	31
110,805	329,533	952 40	320 24	1 20	28.0	33.6	....	32
21,557	71,437	1,428 75	431 14	2 05	37.5	30.2	....	33
377,194	962,000	1,044 52	409 55	1 52	....	39.2	....	34
1,184,647	3,463,804	1,594 02	545 17	1 84	39.4	34.2	....	35
202,067	803,048	1,571 52	395 43	1 81	34.4	25.2	....	36
59,906	157,476	1,259 81	479 25	1 59	40.1	38.0	....	37
65,704	184,101	889 37	317 41	1 23	27.2	35.7	....	38
344,442	1,249,288	1,887 14	520 31	1 72	55.0	27.6	....	39
96,671	336,049	1,456 06	418 49	1 54	37.6	28.8	4,898 tons.	40
48,923	145,641	1,456 41	489 23	1 64	40.3	33.6	....	41
590,787	2,434,451	1,841 49	446 81	1 53	42.2	24.3	....	42
103,105	249,488	1,782 06	736 46	2 40	51.1	41.3	....	43
155,444	645,714	2,532 31	609 59	2 05	71.5	24.1	....	44
33,542	95,599	1,241 54	435 61	1 49	38.8	35.1	....	45
106,907	467,000	1,698 18	388 75	1 29	46.3	22.9	....	46
588,144	3,310,376	2,245 85	399 01	1 44	43.9	17.8	59,852 tons.	47
124,043	988,000	2,593 18	325 57	1 15	50.5	12.6	23,748,793 rolls.	48
2,044,125	8,100,451	1,109 50	279 98	96	40.4	25.2	364,270,636 cigars.	49
66,378	162,373	1,185 20	484 51	1 73	38.2	40.9	....	50
683,523	4,713,313	2,224 31	322 57	1 02	73.9	14.5	....	51
511,220	2,049,073	1,072 25	267 51	89	47.2	24.9	....	52
68,011	192,167	1,325 29	469 04	1 63	29.3	35.4	....	53
144,002	348,220	811 70	335 67	1 36	7.2	41.4	38,642,186 brick.	54
657,846	1,544,553	833 99	355 21	1 56	11.0	42.6	214,165,868 brick.	55
719,308	1,570,074	814 35	373 08	1 33	24.4	45.8	330,914 tons.	56
270,398	515,919	621 59	325 78	1 44	7.1	52.4	43,595 tons.	57
434,572	726,445	536 52	320 95	1 34	9.1	59.8	223,844 squares.	58
2,991,339	6,692,767	935 92	418 31	1 59	24.3	44.7	....	59
1,285,138	10,649,292	3,271 67	394 82	1 31	66.8	12.7	1,139,807 dozens.	60
1,250,818	5,279,502	1,502 42	355 95	1 22	58.4	23.7	3,855,618 pairs,	61

YEAR 1897.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
62.	Suspenders,	2	$92,000	$233,500	303	120
63.	Hats and caps,	3	307,789	418,877	289	489
64.	Fur and felt hats,	4	2,782,743	476,658	308	1,048
65.	Wool hats,	7	424,035	343,808	260	447
66.	Umbrellas and parasols,	4	404,000	708,157	307	575
67.	Dress trimmings, braids, etc.,	8	1,176,796	685,631	295	1,393
68.	Shirts and shirt waists,	9	907,500	974,269	298	1,819
69.	Neckwear,	3	135,000	260,833	306	174
70.	Cotton and woolen cloths,	24	3,478,946	3,781,507	286	4,754
71.	Carpets,	17	3,240,181	2,765,114	292	2,704
72.	Cotton goods,	16	2,825,764	1,498,814	279	2,866
73.	Woolen and worsted cassimeres,	11	1,339,549	1,449,509	277	1,572
74.	Woolen and worsted fabrics,	16	3,156,227	2,924,303	289	3,307
75.	Woolen and worsted yarn,	12	1,719,270	2,111,958	290	1,532
76.	Rugs, yarns, etc.,	5	4,943,779	1,909,431	270	3,009
77.	Carpet yarns,	11	967,575	1,278,068	298	625
78.	Cotton yarns,	7	1,239,175	754,701	275	719
79.	Worsted, woolen and cotton yarns,	10	2,300,289	1,947,247	289	1,875
80.	Woolen blankets, flannels, etc.,	5	687,000	638,333	301	719
81.	Lace goods,	3	741,300	252,059	296	855
82.	Chenille goods,	3	470,000	329,695	300	668
83.	Upholstery goods,	10	1,875,721	1,498,449	299	2,059
84.	Knit goods, underwear,	13	1,798,000	1,925,730	289	2,570
85.	Hosiery,	31	2,154,951	2,117,807	290	5,606
86.	Silk, broad goods, thrown-silk, yarns, etc.,	6	1,624,700	3,310,003	301	3,479
87.	Silk, broad goods and ribbons,	2	1,650,000	1,000,000	301	2,050
88.	Silk—Ribbons,	4	394,180	459,658	299	535
	Total,	801	$201,889,872	$102,239,370	286	137,027

YEAR 1897.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
$33,936	$349,100	$2,909 17	$282 80	$0 93	66.9	9.7	125,000 dozens.	62
179,336	782,060	1,599 30	366 74	1 27	52.9	22.9	103,934 dozens.	63
514,651	1,558,607	1,487 22	491 08	1 59	30.6	33.0	51,025 dozens.	64
143,074	649,061	1,452 04	320 08	1 23	53.0	22.0	195.956 dozens.	65
170,504	1,185,705	2,062 10	296 53	97	59.7	14.4	889,643 pieces.	66
380,240	1,471,696	1,056 49	272 97	93	46.6	25.8	....	67
494,680	1,953,771	1,074 09	271 95	91	49.9	25.3	190,793 dozens.	68
62,988	353,886	2,033 83	362 00	1 18	56.8	17.8	....	69
1,643,929	6,407,337	1.347 78	345 80	1 21	59.0	25.6	....	70
986,918	4,544,385	1,080 61	364 98	1 25	60.8	21.7	13,612,975 yards.	71
896,055	2,998,724	1,046 31	312 65	1 12	50.0	29.9	....	72
523,351	2,618,868	1,665 95	332 92	1 20	55.3	20.0	....	73
1,045,039	5,221.713	1,578 99	316 01	1 09	56.0	20.0	....	74
491,309	3,111,819	2,031 21	320 70	1 11	67.9	15.8	13,427,749 pounds.	75
983,588	4,031,915	1,313 75	320 50	1 19	47.4	24.4	....	76
233,191	1,749.051	2,798 48	373 10	1 25	73.2	13.3	13,882,600 pounds.	77
201,809	1,147,331	1.595 73	280 68	1 02	65.8	17.6	8,278,160 pounds.	78
562,424	3,233,134	1,724 34	299 96	1 04	60.2	17.4	7,316,935 pounds.	79
264,403	1,221,499	1,698 89	367 74	1 22	52.3	21.6	....	80
223,436	1,086,945	1,271 28	261 33	88	23.2	20.6	....	81
169,224	573,450	858 46	253 33	84	57.5	29.5	....	82
765,506	2,864.002	1,390 97	371 79	1 24	52.3	26.7	....	83
674,072	3,338,148	1,298 89	262 28	91	57.7	20.2	....	84
1,377,150	4,518,589	806 03	245 66	85	46.9	30.5	5,366,913 dozens.	85
796,504	4,808,583	1,382 17	228 95	73	68.8	16.6	....	86
477,694	2,371,966	1,157 06	233 02	77	42.1	20.1	3,304.064 yards.	87
187,491	895,892	1,674 56	350 45	1 17	51.4	29.9	9,934,072 yards.	88
$52,504,050	$205,232,150	$1,497 75	$383 17	$1 34	49.3	25.6	....	

YEAR 1898.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
1.	Steel castings,	7	$5,354,846	$517,448	310	1,363
2.	Steel billets, slabs, blooms, etc.,	4	12,718,900	8,285,732	286	1,475
3.	Tool steel, etc.,	3	690,000	89,554	311	214
4.	Iron and steel forgings,	7	482,850	157,035	293	318
5.	Iron specialties,	2	45,000	45,879	301	35
6.	Malleable iron,	4	532,600	698,054	298	1,640
7.	Bolts, nuts, etc.,	8	1,957,776	713,906	274	1,010
8.	Wire nails, rivets, etc.,	4	1,012,950	575,701	189	644
9.	Tacks and small nails,	4	123,500	35,049	248	68
10.	Wire,	5	495,600	127,555	319	122
11.	Wire rope,	2	700,000	248,135	303	190
12.	Wire goods,	5	155,050	62,195	301	228
13.	Wagon and carriage axles and springs,	6	604,475	146,923	289	403
14.	Scales, etc.,	4	176,000	88,225	298	134
15.	Stoves, ranges, heaters, etc.,	37	5,592,761	867,376	237	3,627
16.	Bath boilers, tanks, etc.,	2	54,000	30,676	302	32
17.	Hardware specialties,	14	3,337,946	701,185	256	2,871
18.	Edge tools,	12	1,646,820	293,289	291	878
19.	Wrenches, picks, etc.,	5	571,000	143,063	283	272
20.	Locomotives and cars built and repaired,	3	1,442,800	4,191,152	296	5,965
21.	Wrought iron pipe and tubes,	5	13,505,000	8,285,486	303	5,693
22.	Cast iron pipe,	3	611,710	810,511	296	689
23.	Brass, copper and bronze goods,	19	1,853,450	1,319,160	297	1,327
24.	Iron and steel bridges,	7	961,050	2,126,144	302	1,423
25.	Locomotives, stationary engines, etc.,	9	12,118,787	5,386,109	305	7,967
26.	Engines, boilers, etc.,	10	3,930,783	1,514,153	304	1,904
27.	Cars, springs, axles and railway supplies,	12	5,872,258	2,757,366	295	3,130
28.	Iron vessels and engines,	3	7,262,278	2,997,076	304	5,384
29.	Boilers, tanks, stacks, etc.,	21	1,656,210	1,172,463	291	1,386

YEAR 1898.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
$619,179	$2,098,933	$1,539 94	$454 28	$1 46	24.6	29.5	27,786 tons.	1
873,163	10,257,159	6,954 01	591 07	2 07	80.8	8.5	722,475 tons.	2
153,303	445,065	2,079 74	716 37	2 30	20.1	34.4	1,086 tons.	3
175,796	463,025	1,456 05	552 82	1 89	33.9	28.0	6,866 tons.	4
18,700	78,107	2,231 63	534 29	1 77	58.7	23.9	1,061 tons.	5
776,815	2,288,315	1,395 31	473 67	1 59	30.5	33.9	38,228 tons.	6
348,639	1,424,103	1,410 00	345 19	1 26	50.1	24.5	....	7
185,422	1,083,291	1,661 58	279 25	1 48	53.1	17.1	33,170 tons.	8
24,483	94,162	1,384 73	360 04	1 45	27.2	26.0	1,243 tons.	9
59,750	267,257	2,190 63	489 75	1 54	47.7	22.4	3,731 tons.	10
88,858	655,466	3,449 82	467 67	1 54	37.9	13.6	3,749 tons.	11
63,323	323,568	1,419 16	277 73	92	19.2	19.6	....	12
210,517	645,805	1,602 49	522 37	1 81	22.7	32.6	....	13
75,860	263,364	1,965 40	566 12	1 93	33.5	28.8	....	14
1,753,955	4,227,360	1,165 53	483 58	2 04	20.5	27.3	....	15
13,611	62,102	1,940 69	425 34	1 41	49.4	21.9	....	16
1,127,879	2,823,993	983 62	392 28	1 53	24.8	39.9	....	17
401,694	1,069,190	1,217 76	457 51	1 57	27.4	37.6	....	18
139,125	494,058	1,816 39	511 49	1 88	29.0	28.1	....	19
3,411,544	8,000,396	1,341 22	571 93	1 93	52.4	42.6	....	20
2,451,501	14,552,862	2,556 27	430 62	1 42	56.9	16.9	358,304 tons.	21
263,550	1,260,038	1,828 79	382 51	1 29	64.3	20.1	79,212 tons.	22
575,651	2,416,478	1,821 01	433 80	1 46	54.6	23.8	....	23
647,664	3,717,213	2,612 24	455 14	1 51	57.2	17.4	73,781 tons.	24
4,559,167	12,862,598	1,614 48	572 26	1 88	41.9	35.5	....	25
996,882	3,088,737	1,622 24	523 57	1 72	49.0	32.3	....	26
1,491,520	8,227,597	2,628 62	476 52	1 61	33.5	18.1	....	27
2,880,847	6,635,431	1,232 34	535 08	1 76	45.2	43.4	....	28
639,883	2,455,255	1,771 47	461 68	1 59	47.8	26.1	....	29

YEAR 1898.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
30.	Machinery, ...	21	$9,297,253	$2,030,334	300	4,434
31.	Foundries and machine shops,	25	3,161,069	1,263,302	296	2,447
32.	Files, etc., ...	2	512,000	82,739	278	369
33.	Saws, ...	3	335,000	28,087	244	47
34.	Plumbers' supplies, ...	3	2,031,622	*	290	965
35.	Electrical supplies, ...	4	13,893,503	2,340,407	301	3,499
36.	Shovels, spades, scoops, etc.,	8	648,100	296,298	246	528
37.	Safes and vault doors, ...	2	68,000	65,984	298	121
38.	Metal and metallic goods, ...	3	390,000	58,176	256	225
39.	Building and structural iron work, ...	2	823,000	1,241,336	307	841
40.	Iron chains, ...	5	264,542	165,742	298	269
41.	Iron fences and railings, ...	7	46,000	81,971	305	126
42.	Agricultural implements, ...	12	1,943,000	1,171,437	300	1,499
43.	Steam pumps, ...	2	380,871	123,813	304	151
44.	Bicycles, ...	3	255,000	455,452	277	352
45.	Pianos and organs, ...	2	117,000	57,843	294	95
46.	Tinware, ...	5	374,000	217,433	300	278
47.	Paper manufactories, ...	8	4,771,595	1,486,541	283	1,483
48.	Wall paper, ...	4	410,500	589,750	284	402
49.	Cigars, ...	46	3,044,190	3,654,579	298	7,800
50.	Book binding, ...	3	130,000	65,522	283	156
51.	Cordage, ropes, twine, etc.,	5	3,260,000	3,524,381	312	2,091
52.	Paper, paper boxes, envelopes, etc., ...	27	1,489,559	1,044,300	302	2,472
53.	Pottery, ...	2	560,000	56,589	291	153
54.	Paving brick, ...	7	549,644	23,113	246	447
55.	Building brick, ...	35	3,714,386	174.974	218	1,905
56.	Fire brick, ...	18	2,556,283	418,484	243	2,327
57.	Slate roofing, etc., tonnage,..	6	1,022,007	32,421	245	762
58.	Slate roofing, etc., squares,..	14	704,913	69,499	177	1,875
59.	Window glass, bottles, and table goods, ...	22	13,607,329	1,587,765	276	7,735
60.	Glazed and chrome kid, ...	7	4,163,993	8,092,540	298	3,745
61.	Men's, women's, misses and children's shoes, ...	15	2,350,481	3,187,425	288	3,688

*Incomplete returns of value of basic material.

YEAR 1898.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
$2,402,335	$6,500,975	$1,466 16	$541 79	$1 81	31.2	37.0	....	30
1,184,333	3,571,600	1,459 58	483 99	1 63	35.4	33.2	....	31
117,553	400,465	1.085 27	318 57	1 15	20.7	29.4	....	32
22,939	76,338	1,624 21	488 06	2 00	36.8	30.0	....	33
432,969	1,097,058	1,136 85	448 67	1 55	....	39.5	....	34
1,929,920	6,821,374	1,949 52	551 56	1 83	34.3	28.3	....	35
236,593	997,314	1,888 85	448 09	1 82	29.7	23.7	....	36
61,012	153,085	1,265 17	504 23	1 69	43.1	39.9	....	37
74,084	207 496	922 20	329 26	1 29	28.0	35.7	....	38
441,539	2,057,639	2,446 66	525 02	1 71	60.3	21.4	....	39
120,291	409,304	1,521 58	447 18	1 50	40.5	29.4	6,307 tons.	40
57,197	187,059	1,484 60	453 94	1 49	43.8	30.6	....	41
696,721	2,840,608	1,895 00	464 79	1 55	41.2	24.5	....	42
112,032	313,511	2,076 23	741 93	2 44	39.5	35.7	....	43
154,962	683,862	1,942 79	440 23	1 63	66.6	22.7	....	44
45,882	136,971	1,441 80	482 97	1 64	42.2	33.5	....	45
103,119	469,200	1,687 77	370 93	1 24	46.2	22.0	....	46
591,810	3,315,552	2,235 71	399 06	1 41	44.8	17.8	55,014 tons.	47
139,400	1,154,386	2,871 61	346 77	1 22	51.1	12.1	28,867,977 rolls.	48
2,235,665	8,866,424	1,136 72	286 62	98	41.2	25.2	362,674,423 cigars.	49
75,293	180,567	1,157 48	482 65	1 70	36.3	41.7	....	50
674,993	4,947,813	2,366 24	322 81	1 03	71.2	13.6	....	51
567,743	2,282,183	923 21	229 67	76	45.8	24.9	....	52
73,799	226,326	1,479 25	482 34	1 66	25.0	32.6	....	53
148,144	367,395	821 91	331 42	1 35	6.3	40.3	40,451,959 bricks.	54
653,415	1,492,161	783 29	343 00	1 57	11.7	43.8	238,084,927 bricks.	55
843,336	1,915,392	823 12	362 41	1 49	21.8	44.0	408,796 tons.	56
250,225	537,702	705 64	328 38	1 34	6.0	46.5	37,109 tons.	57
472,437	756,977	403 72	251 97	1 42	9.2	62.4	273,928 squares.	58
3,412,343	7,713,185	997 18	441 16	1 60	20.6	44.2	....	59
1,472,762	12,691,322	3,338 87	393 26	1 32	63.8	11.6	1,332,785 dozens.	60
1,325,230	5,620,155	1,523 90	359 34	1 25	56.7	23.6	3,739,548 pairs.	61

YEAR 1898.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
62.	Suspenders, ...	2	$95,000	$245,000	297	127
63.	Hats and caps, ...	3	296,776	377,205	286	560
64.	Fur and felt hats, ...	4	2,775,406	494,817	307	1,257
65.	Wool hats, ...	7	458,635	314,029	279	480
66.	Umbrellas and parasols, ...	4	327,000	754,090	308	505
67.	Dress trimmings, braids, etc.,	8	1,229,296	876,508	298	1,543
68.	Shirts and shirt waists, ...	9	933,200	1,143,081	298	1,993
69.	Neckwear, ...	3	135,000	214,342	308	183
70.	Cotton and woolen cloths, ...	24	3,477,346	3,745,019	266	4,705
71.	Carpets, ...	17	3,339,213	2,850,838	292	2,753
72.	Cotton goods, ...	16	2,893,271	1,478,396	290	3,007
73.	Woolen and worsted cassimeres, ...	11	1,301,000	1,581,776	262	1,700
74.	Woolen and worsted fabrics,	16	3,305.892	3,030,628	288	3,075
75.	Woolen and worsted yarn, ..	12	2,616,000	1,994,012	289	1,445
76.	Rugs, yarns, etc., ...	5	5,056,824	1,741,967	277	2,926
77.	Carpet yarns, ...	11	968,000	946,871	266	577
78.	Cotton yarns, ...	7	1,245,037	759,380	294	795
79.	Worsted, woolen and cotton yarns, ...	10	2,314,603	1,724,655	246	1,915
80.	Woolen blankets, flannels, etc., ...	5	696,500	1,133,808	351	1,063
81.	Lace goods, ...	3	795,000	290,322	307	974
82.	Chenille goods, ...	8	470,000	356,595	300	599
83.	Upholstery goods, ...	10	1,856,148	1,626,165	301	2,127
84.	Knit goods, underwear, ...	13	1,833,600	2,058,746	280	2,568
85.	Hosiery, ...	31	2,347,041	2,312,556	286	5,917
86.	Silk, broad goods, thrownsilk, yarns, etc., ...	6	1,977,500	3,764,644	293	3,789
87.	Silk, broad goods and ribbons, ...	2	1,660,000	1,200 000	302	2,200
88.	Silk—Ribbons, ...	4	445,313	514,851	299	634
	Total, ...	801	$207,219,841	$115,605,108	286	153,096

YEAR 1898.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
$41,000	$391,500	$3,082 68	$322 83	$1 09	62.6	10.5	165,000 dozens.	62
176,383	737,149	1,316 34	314 97	1 10	51.2	23.9	100,663 dozens.	63
595,085	1,731,063	1,377 16	473 42	1 54	28.6	34.4	55,925 dozens.	64
140,773	636,904	1,326,88	293 28	1 05	49.3	22.1	201,718 dozens.	65
135,627	1,156,372	2,289 85	268 57	87	65.2	11.7	889,252 pieces.	66
413,277	1,708,275	1,107 11	267 84	90	51.3	24.2	....	67
539,135	2,186,983	1,097 33	270 51	91	52.3	24.7	337,213 dozens.	68
68,975	375,689	2,052 95	376 91	1 22	57.1	18.4	....	69
1,646,482	6,466,073	1,374 30	349 94	1 32	57.9	25.5	....	70
998,647	4,823,328	1,752 03	362 75	1 24	59.1	20.7	12,904,587 yards.	71
965,037	3,104.170	1,032 31	320 93	1 11	47.6	31.1	....	72
565,281	2,799,134	1,646 55	332 52	1 27	56.5	20.2	....	73
1,066,441	5,320,285	1,730 17	346 81	1 20	57.0	20.0	....	74
453,110	3,819,936	2,643 55	313 57	1 09	52.2	11.8	9,307,876 pounds.	75
996,501	3,931,652	1,343 70	340 57	1 23	44.3	25.3	....	76
192,218	1,302,256	2,412 92	333 13	1 25	68.0	13.8	11,499,606 pounds.	77
239,109	1,245,952	1,567 23	300 77	1 02	60.9	19.2	9.070,922 pounds.	78
541,000	3,890,304	1,509 30	282 51	1 15	59.7	18.7	6,546,001 pounds.	79
350,302	2,107,398	1,982 50	329 54	94	53.8	16.6	....	80
269,910	1,219,698	1,252 26	277 11	90	23.8	22.1	....	81
171,041	591,280	987 11	285 54	95	60.3	28.9	....	82
347,374	3,100,667	1,457 70	398 38	1 32	52.4	27.3	....	83
686,552	3,493,036	1,360 22	267 35	95	58.9	19.6	....	84
1,483,567	4,880,155	824 77	250 73	88	47.4	30.4	7,181,631 dozens.	85
907,095	5,555,201	1,466 14	239 40	82	67.8	16.3	....	86
516,061	2,898,933	1,317 70	234 57	78	41.4	17.8	3,712,633 yards.	87
213,252	1,067,823	1,684 26	336 36	1 12	48.2	20.0	13,346,776 yards.	88
$60,377,592	$240,813,543	$1,572 96	$394 38	$1 38	48.1	25.1	....	

YEAR 1899.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
1.	Steel castings,	7	$5,393,523	$822,724	302	1,705
2.	Steel billets, slabs, blooms, etc.,	4	13,318,900	14,459,812	295	1,802
3.	Tool steel, etc.,	3	690,000	96,154	291	209
4.	Iron and steel forgings,	7	491,800	252,496	300	395
5.	Iron specialties,	2	45,000	48,083	301	31
6.	Malleable iron,	4	1,527,533	839,640	298	1,831
7.	Bolts, nuts, etc.,	8	2,192,934	1,456,313	284	1,268
8.	Wire nails, rivets, etc.,	4	1,045,000	738,589	142	725
9.	Tacks and small nails,	4	163,500	68,184	280	158
10.	Wire,	5	605,900	135,429	323	157
11.	Wire rope,	2	700,000	361,009	304	232
12.	Wire goods,	5	170,550	88,686	301	257
13.	Wagon and carriage axles and springs,	6	614,000	282,368	285	494
14.	Scales, etc.,	4	206,000	111,309	302	159
15.	Stoves, ranges, heaters, etc.,	37	5,528,895	1,080,427	254	3,682
16.	Bath boilers, tanks, etc.,	2	59,000	44,809	304	45
17.	Hardware specialties,	14	3,559,734	1,053,817	280	3,307
18.	Edge tools,	12	1,233,793	399,445	294	1,018
19.	Wrenches, picks, etc.,	5	571,000	228,910	293	341
20.	Locomotives and cars built and repaired,	3	1,461,400	5,634,355	304	6,655
21.	Wrought iron pipe and tubes,	5	14,101,131	15,485,996	269	8,754
22.	Cast iron pipes,	3	896,776	912,507	252	749
23.	Brass, copper and bronze goods,	19	1,877,750	2,137,539	303	1 507
24.	Iron and steel bridges,	7	1,001,050	3,193,878	280	1,680
25.	Locomotives, stationary engines, etc.,	9	12,950,218	8,606,253	307	9,827
26.	Engines, boilers, etc.,	10	4,036,999	2,331,697	301	2,163
27.	Cars, springs, axles and railway supplies,	12	27,585,264	10,447,921	309	6,343
28.	Iron vessels and engines,	3	7,866,622	5,117,337	296	6,188
29.	Boilers, tanks, stacks, etc.,	21	1,857,238	1,848,563	304	1,627

YEAR 1899.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
$838,679	$2,857,935	$1,676 21	$491 89	$1 63	28.7	29.3	34,845 tons.	1
1,239,839	18,832,437	10,450 85	688 03	2 33	76.8	6.6	842,183 tons.	2
140,945	479,480	2,294 16	674 38	2 32	20.1	29.4	1,295 tons.	3
249,106	784,254	1,985 45	630 65	2 10	32.2	31.8	9,813 tons.	4
18,350	80,420	2,594 20	591 94	1 97	59.8	22.8	913 tons.	5
928,417	2,807,229	1,533 17	507 05	1 70	29.9	33.1	44,852 tons.	6
477,994	2,465,793	1,944 63	376 97	1 33	59.1	19.3	....	7
244,745	1,803,903	2,488 14	337 58	2 38	40.9	13.6	37,245 tons.	8
54,460	192,644	1,219 27	344 68	1 23	35.4	28.3	2,287 tons.	9
77,437	310,572	1,914 47	493 23	1 53	43.6	24.9	4,024 tons.	10
113,217	971,118	4,185 85	488 00	1 61	37.2	11.7	4,880 tons.	11
82,879	396,067	1,541 11	322 50	1 07	22.4	20.9	....	12
257,772	914,713	1,851 65	521 80	1 83	30.9	28.2	....	13
96,360	346,487	2,179 18	604 78	2 00	32.1	27.8	....	14
1,970,880	5,044,253	1,369 98	535 27	2 11	21.4	39.1	....	15
19,448	89,691	1,993 13	432 18	1 42	50.0	21.7	....	16
1,428,934	3,839,960	1,161 16	432 09	1 54	27.0	37.2	....	17
474,562	1,393,284	1,368 65	466 17	1 59	28.7	34.1	....	18
179,408	685,497	2,010 26	526 12	1 80	33.4	26.2	....	19
4,049,295	10,020,362	1,505 69	608 46	2 00	56.2	40.4	....	20
4,566,297	26,160,998	2,988 46	521 62	1 94	59.2	17.5	452,513 tons.	21
260,355	1,350,801	1,825 41	351 83	1 40	67.6	19.3	61,344 tons,	22
661,456	3,549,845	2,355 57	438 92	1 45	60.2	18.6	....	23
722,759	5,095,097	3,032 80	430 21	1 54	62.7	14.2	81,970 tons.	24
5,764,855	17,572,598	1,788 20	586 63	1 91	49.0	32.8	....	25
1,185,494	4,574,136	2,114 72	548 08	1 82	51.0	25.9	....	26
3,359,489	18,549,857	2,924 26	529 63	1 71	56.3	18.1	....	27
3,428,153	9,165,761	1,481 22	554 00	1 87	55.8	37.4	....	28
780,279	3,454,771	2,123 40	479 58	1 58	53.5	22.6	....	29

YEAR 1899.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
30.	Machinery,	21	$9,650,673	$3,239,736	302	5,6[illegible]0
31.	Foundries and machine shops,	25	3,621,203	1,925,085	304	3,104
32.	Files, etc.,	2	512,000	105,104	302	394
33.	Saws,	3	335,000	31,600	250	47
34.	Plumbers' supplies,	3	2,080,669	552,190	312	1,046
35.	Electrical supplies,	4	14,018,383	3,573,084	302	5,184
36.	Shovels, spades, scoops, etc.,	8	648,100	465,999	281	563
37.	Safes and vault doors,	2	68,000	65,539	294	120
38.	Metal and metallic goods,	3	390,000	82,334	265	260
39.	Building and structural iron work,	2	823,000	1,227,578	305	1,240
40.	Iron chains,	5	264,542	252,412	296	299
41.	Iron fences and railings,	7	49,300	133,235	303	155
42.	Agricultural implements,	12	1,703,000	1,381,353	298	1,595
43.	Steam pumps,	2	433,343	176,738	301	225
44.	Bicycles,	3	255,000	308,541	275	297
45.	Pianos and organs,	2	141,000	59,162	293	105
46.	Tinware,	5	414,000	272,376	301	275
47.	Paper manufactories,	8	5,082,399	1,739,547	284	1,681
48.	Wall paper,	4	410,000	627,300	282	401
49.	Cigars,	46	3,347,204	3,797,460	295	8,308
50.	Book binding,	3	131,800	77,379	280	176
51.	Cordage, ropes, twine, etc.,	5	3,435,000	4,509,784	312	2,191
52.	Paper, paper boxes, envelopes, etc.,	27	1,873,115	1,129,745	303	2,302
53.	Pottery,	2	510,000	54,604	298	162
54.	Paving brick,	7	614,478	33,506	230	528
55.	Building brick,	35	3,838,184	181,106	220	1,894
56.	Fire brick,	18	2,746,876	552,972	249	2,947
57.	Slate roofing, etc., tonnage,	6	831,112	31,861	236	664
58.	Slate roofing, etc., squares,	14	534,914	80,325	245	1,552
59.	Window glass, bottles, and table goods,	22	13,677,194	1,990,388	283	8,699
60.	Glazed and chrome kid,	7	4,609,490	11,007,875	300	4,598
61.	Men's, women's, misses and children's shoes,	15	2,446,081	3,293,639	298	3,468

YEAR 1899.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
$3,122,970	$8,730,374	$1,550 68	$554 70	$1 84	37.1	35.8	....	30
1,570,135	5,201,285	1,675 67	505 84	1 66	37.0	30.2	....	31
136,071	456,967	1,159 81	345 36	1 14	23.0	29.8	....	32
24,100	83,624	1,779 23	512 77	2 05	37.8	28.8	....	33
502,827	1,436,661	1,373 48	480 71	1 54	38.4	35.0	....	34
2,856,814	11,462,408	2,211 11	551 08	1 82	31.2	24.9	....	35
291,969	1,493,946	2,653 55	518 60	1 85	31.2	19.5	....	36
59,965	156,773	1,306 44	499 71	1 70	41.8	38.2	....	37
106,846	300,978	1,118 88	397 20	1 50	27.4	38.5	....	38
657,942	2,157,573	1,739 98	530 60	1 74	56.9	30.5	....	39
140,403	584,109	1,953 54	469 58	1 59	43.2	24.0	6,745 tons.	40
69,864	260,498	1,680 63	450 74	1 49	51.1	26.8	....	41
762,800	3,185,835	1,997 39	478 24	1 61	43.4	24.3	....	42
166,746	411,714	1,829 84	741 08	2 46	42.9	40.5	....	43
127,384	523,870	1,763 87	428 90	1 61	58.9	24.3	....	44
48,127	178,679	1,701 70	458 35	1 56	33.1	27.0	....	45
118,410	545,475	1,983 55	430 58	1 43	49.9	21.7	....	46
688,257	4,254,182	2,530 74	409 03	1 44	40.9	16.2	67,929 tons.	47
143,741	1,255,190	3,130 15	358 45	1 27	50.0	11.4	27,458,252 rolls.	48
2,424,293	9,676,533	1,164 72	291 80	99	39.2	25.1	396,987,894 cigars.	49
86,318	208,527	1,184 81	490 44	1 75	37.1	41.4	....	50
792,522	6,219,058	2,838 46	361 71	1 16	72.5	12.7	....	51
1,678,205	2,473,800	1,074 63	294 62	97	45.7	27.4	....	52
78,658	244,254	1,507 74	485 54	1 63	22.4	32.2	....	53
176,133	416,263	788 38	334 91	1 45	8.0	42.5	44,546,987 bricks.	54
692,770	1,676,130	884 97	365 77	1 66	10.8	41.3	238,429,295 bricks.	55
1,133,377	2,486,398	843 70	384 59	1 55	22.2	45.6	538,099 tons.	56
219,276	467,112	703 48	330 23	1 40	6.8	46.9	35,560 tons.	57
544,953	930,606	599 62	351 13	1 43	8.6	58.5	287,826 squares.	58
4,043,313	9,295,604	1,068 58	464 80	1 64	21.4	43.5	....	59
1,907,913	16,342,644	3,554 29	414 94	1 38	67.4	11.7	1,688,109 dozens.	60
1,335,825	5,791,046	1,660 28	382 98	1 29	56.9	23.0	4,137,680 pairs.	61

YEAR 1899.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
62.	Suspenders, ...	2	$120,000	$315,000	299	162
63.	Hats and caps, ...	3	307,676	433,669	283	560
64.	Fur and felt hats, ...	4	2,775,439	593,645	309	1,412
65.	Wool hats, ...	7	414,493	333,533	260	537
66.	Umbrellas and parasols, ...	4	353,000	694,246	308	531
67.	Dress trimmings, braids, etc.,	8	3,119,688	912,697	301	1,760
68.	Shirts and shirt waists, ...	9	979,900	1,342,360	298	2,294
69.	Neckwear, ...	3	135,000	261,882	308	195
70.	Cotton and woolen cloths, ..	24	3,550,167	4,768,367	273	5,193
71.	Carpets, ...	17	3,653,864	3,494,859	302	2,834
72.	Cotton goods, ...	16	3,309,205	1,708,151	296	3,294
73.	Woolen and worsted cassimeres, ...	11	1,382,000	2,058,438	281	1,928
74.	Woolen and worsted fabrics,	16	3,489,180	3,542,014	296	3.414
75.	Woolen and worsted yarn, ..	12	2,686,000	2,636,300	291	1.478
76.	Rugs, yarns, etc., ...	5	5,393,446	1,937,653	285	3,074
77.	Carpet yarns, ...	11	1,062,532	1,351,831	299	633
78.	Cotton yarns, ...	7	1,296,148	798,654	290	800
79.	Worsted, woolen and cotton yarns, ...	10	2,642.458	2,447,491	217	1,904
80.	Woolen blankets, flannels, etc., ...	5	794,122	815,512	279	967
81.	Lace goods, ...	3	860.850	350,185	305	1,098
82.	Chenille goods, ...	3	465,000	365,058	300	601
83.	Upholstery goods, ...	10	1,985,679	1.730.220	290	2,278
84.	Knit goods, underwear, ...	13	1,987,729	2.215,033	279	2.864
85.	Hosiery, ...	31	2.894,145	2.306,461	281	6,146
86.	Silk, broad goods, thrown-silk, yarns, etc., ...	6	2,102,500	4,699.556	278	3.601
87.	Silk, broad goods and ribbons, ...	2	1.670,000	1.315,000	301	2,000
88.	Silk—Ribbons, ...	4	463,316	517,973	293	644
	Total, ...	801	$239,377,197	$165,089,595	288	175,641

YEAR 1899.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
$61,150	$483,560	$2,983 02	$377 47	$1 26	65.2	12.7	180,500 dozens.	62
191,909	698,891	1,248 02	342 69	1 21	62.0	27.5	96,229 dozens.	63
665,296	2,020,731	1,431 11	471 17	1 52	29.4	32.9	64,127 dozens.	64
163,164	746,186	1,389 55	303 84	1 14	44.7	21.9	208,122 dozens.	65
144,650	1,231,088	2,318 43	272 41	89	56.4	11.7	942,826 pieces.	66
479,688	2,085,395	1,184 88	272 55	91	43.8	23.0	....	67
687,095	2,660,418	1,162 78	289 52	1 01	50.3	25.8	393,622 dozens.	68
73,883	437,720	2,244 72	378 89	1 23	59.8	16.9	....	69
1,934,224	8,264,359	1,591 44	372 47	1 36	57.7	23.4	....	70
1,177,796	5,940,777	2,096 25	415 59	1 37	58.8	19.8	15,648,813 yards.	71
1,103,648	3,533,249	1,072 61	335 05	1 13	48.3	31.2	....	72
673,336	3,548,303	1,840 41	349 24	1 24	58.0	19.0	....	73
1,217,967	6,082,189	1,781 54	356 76	1 21	58.2	20.0	....	74
534,400	5,256,352	3,556 40	361 57	1 24	50.2	10.2	9,705,579 pounds.	75
1,172,575	4,504,288	1,465 29	381 45	1 34	43.0	26.0	....	76
242,414	1,758,794	2,778 50	382 96	1 28	71.2	13.8	15.271,761 pounds.	77
244,291	1,333,579	1.666 97	305 36	1 05	59.9	18.3	9,278,304 pounds.	78
655,368	4,127,434	2,167 77	344 21	1 24	59.3	15.9	7,375,619 pounds.	79
322,275	1,633,499	1,689 24	333 27	1 19	49.9	19.7	....	80
313,641	1,307,879	1,191 15	285 65	94	26.8	24.0	....	81
203,598	664,622	1,105 86	338 77	1 13	54.9	30.6	....	82
921,752	1,514,614	1.542 82	404 63	1 40	49.2	26.2	....	83
790,868	3,851,935	1,344 95	276 14	99	57.5	20.5	....	84
1,610,552	5,239,702	852 54	262 05	93	44.0	30.7	5,934,516 dozens.	85
963,224	6,944,577	1,978 51	267 49	96	67.7	13.9	....	86
522,612	3,112,400	1,556 20	261 31	87	42.3	16.8	5,668,697 yards.	87
217,812	1,038,299	1,612 27	338 22	1 15	49.9	21.0	15,984,362 yards.	88
$76,669,979	$324,725,616	$1,848 80	$436 52	$1 52	50.8	23.6	....	

YEAR 1900.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
1.	Steel castings,	7	$5,394,263	$618,748	307	1,741
2.	Steel billets, slabs, blooms, etc.,	4	13,791,119	13,200,979	246	1,682
3.	Tool steel, etc.,	3	1,050,000	78,514	292	132
4.	Iron and steel forgings,	7	496,100	241,555	292	384
5.	Iron specialties,	2	45,500	51,684	301	42
6.	Malleable iron,	4	1,524,280	975,533	291	1,671
7.	Bolts, nuts, etc.,	8	2,359,574	1,428,181	291	1,324
8.	Wire nails, rivets, etc.,	4	1,025,000	765,914	116	812
9.	Tacks and small nails,	4	163,500	64,075	253	141
10.	Wire,	5	611,900	216,356	301	254
11.	Wire rope,	2	1,100,000	1,035,106	306	342
12.	Wire goods,	5	167,916	85,360	301	208
13.	Wagon and carriage axles and springs,	6	606,454	238,419	278	473
14.	Scales, etc.,	4	216,000	122,333	298	177
15.	Stoves, ranges, heaters, etc.,	37	7,360,316	1,409,891	245	3,758
16.	Bath boilers, tanks, etc.,	2	59,000	44,391	308	38
17.	Hardware specialties,	14	4,045,685	849,471	249	3,154
18.	Edge tools,	12	1,689,815	486,985	297	1,077
19.	Wrenches, picks, etc.,	5	575,000	256,264	280	386
20.	Locomotives and cars built and repaired,	3	1,461,400	6,459,641	303	7,185
21.	Wrought iron pipe and tubes,	5	14,101,131	12,906,404	266	5,420
22.	Cast iron pipe,	3	896,776	1,123,503	306	797
23.	Brass, copper and bronze goods,	19	2,010,167	1,597,301	299	1,582
24.	Iron and steel bridges,	7	1,901,050	5,544,996	301	2,233
25.	Locomotives, stationary engines, etc.,	9	13,417,380	11,568,788	307	12,003
26.	Engines, boilers, etc.,	10	4,114,000	2,480,161	306	2,373
27.	Cars, springs, axles and railway supplies,	12	27,971,682	18,766,916	311	9,125
28.	Iron vessels and engines,	3	10,973,657	6,705,326	292	6,677
29.	Boilers, tanks, stacks, etc.,	21	2,022,964	2,148,536	305	1,933

YEAR 1900.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
$821,510	$3,172,100	$1,822 00	$471 86	$1 54	19.5	25.9	33,231 tons.	1
1,087,913	14,649,357	8,709 49	646 80	2 63	90.1	7.4	675,994 tons.	2
98,601	436,340	3.305 61	746 98	2 56	18.0	22.6	1,667 tons.	3
263,271	745,873	1.942 38	685 60	2 35	59.2	35.3	9,159 tons.	4
20,350	89,724	2,136 29	484 52	1 61	57.6	22.7	1,017 tons.	5
866,482	2,485,414	1,487 38	518 54	1 78	39.3	34.9	77,926 tons.	6
508,683	2,843,678	2,147 79	384 20	1 32	50.2	17.9	41,218 tons.	7
165,895	1,347,191	1,659 19	294 30	1 76	56.8	12.3	22.514 tons.	8
44,982	171,291	1,214 83	319 62	1 26	37.4	26.3	1,975 tons.	9
104,066	452,592	1,781 85	409 71	1 36	47.8	23.0	3,944 tons.	10
164,517	1,471,284	4,302 00	481 04	1 57	70.4	11.2	6,443 tons.	11
64,328	342,677	1,647 49	269 27	1 03	24.9	18.8	....	12
237,358	737,639	1,559 49	501 81	1 80	32.3	32.2	....	13
105,851	375,036	2,118 85	598 03	2 01	32.6	28.2	....	14
2,126,605	5,360,816	1,426 51	565 89	2 31	26.3	39.7	....	15
16,804	82,639	2,174 71	442 21	1 44	53.7	20.3	....	16
1,226,396	3,341,572	1,059 47	388 84	1 56	25.4	36.7	....	17
507,597	1,618,418	1,502 71	471 30	1 59	30.1	31.4	....	18
184,711	690,584	1,789 08	478 53	1 71	37.1	26.7	....	19
4,366,592	11,203,744	1,559 32	607 74	2 01	57.7	39.0	....	20
2,575,403	21,342,983	3,937 82	475 17	1 79	60.5	12.1	295,574 tons.	21
357,650	1,745,213	2,189 73	448 75	1 47	64.4	20.5	74,456 tons.	22
742,750	3,487,255	2,204 39	469 50	1 57	45.8	21.3	....	23
1,225,666	8,649,413	3,873 45	553 36	1 84	64.1	14.3	134,231 tons.	24
7,274,385	24,600,085	2,049 49	606 05	1 97	47.0	29.6	....	25
1,309,636	5,088,689	2,144 41	551 89	1 80	48.7	25.7	....	26
4,865,877	3,621,417	3,310 84	533 25	1 71	62.1	16.1	....	27
3,538,223	12,062,974	1.806 65	529 91	1 81	55.6	29.3	....	28
893,362	4,085,048	2,113 32	462 16	1 52	52.5	21.9	....	29

YEAR 1900.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
30.	Machinery,	21	$10,418,419	$3,607,094	302	6,100
31.	Foundries and machine shops,	25	3,939,754	2,036,612	300	3,204
32.	Files, etc.,	2	512,000	113,699	291	422
33.	Saws,	3	334,000	48,071	281	56
34.	Plumbers' supplies,	3	2,260,387	425,043	312	1,048
35.	Electrical supplies,	4	15,032,833	5,375,117	296	6,210
36.	Shovels, spades, scoops, etc.,	8	741,100	406,234	253	532
37.	Safes and vault doors,	2	173,397	121,397	290	180
38.	Metal and metallic goods,	3	390,000	93,877	275	297
39.	Building and structural iron work,	2	823,000	3,053,789	306	1,678
40.	Iron chains,	5	334,798	239,225	252	264
41.	Iron fences and railings,	7	56,500	157,497	305	197
42.	Agricultural implements,	12	2,035,000	1,483,154	299	1,587
43.	Steam pumps,	2	479,015	200,479	301	268
44.	Bicycles,	3	255,000	244,612	236	256
45.	Pianos and organs,	2	246,000	79,526	292	146
46.	Tinware,	5	434,000	290,940	300	328
47.	Paper manufactories,	8	5,666,232	1,748,551	297	1,740
48.	Wall paper,	4	800,000	595,111	280	349
49.	Cigars,	46	3,669,420	4,033,899	296	8,668
50.	Book binding,	3	136,250	83,716	288	188
51.	Cordage, ropes, twine, etc.,	5	3,410,000	5,340,848	300	2,256
52.	Paper, paper boxes, envelopes, etc.,	27	1,933,681	1,235,711	300	2,242
53.	Pottery,	2	505,000	64,561	288	172
54.	Paving brick,	7	642,074	72,534	270	587
55.	Building brick,	35	3,845,898	165,202	217	1,865
56.	Fire brick,	18	2,935,232	790,260	300	3,823
57.	Slate roofing, etc., tonnage,	6	974,100	28,146	255	764
58.	Slate roofing, etc., squares,	14	630,914	69,280	244	1,560
59.	Window glass, bottles, and table goods,	22	14,972,077	2,050,111	265	9,943
60.	Glazed and chrome kid,	7	4,861,913	9,330,221	270	4,439
61.	Men's, women's, misses and children's shoes,	15	2,440,783	3,179,012	295	3,467

YEAR 1900.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
$3,292,239	$10,067,941	$1,650 48	$539 71	$1 79	35.8	32.7	....	30
1,748,800	5,867,126	1,831 19	545 82	1 82	34.7	29.8	....	31
140,544	477,377	1,131 23	333 04	1 14	23.8	29.4	....	32
32,108	132,105	2,359 02	573 36	2 04	36.4	24.4	....	33
504,686	1,301,478	1,241 87	481 57	1 54	32.6	38.8	....	34
3,517,368	15,447,949	2,487 59	566 40	1 91	34.8	22.8	....	35
230,909	1,134,772	2,133 03	434 04	1 72	35.8	20.3	....	36
79,594	257,778	1,432 10	442 19	1 52	47.1	30.9	....	37
116,057	334,973	1,127 85	390 76	1 42	28.0	34.6	....	38
879,148	4,572,828	2,725 17	523 93	1 71	66.8	19.2	....	39
124,543	508 450	1,925 95	471 75	1 87	47.0	24.5	6,597 tons.	40
88,304	306,812	1,557 42	448 24	1 47	51.3	28.8	....	41
760,373	3,176,317	2,001 46	479 13	1 60	46.7	23.9	....	42
193,157	645,011	2,406 76	720 73	2.39	31.1	29.9	....	43
97,992	377,368	1,474 09	282 78	1 62	64.8	26.0	....	44
63,243	205,621	1,408 36	433 17	1 48	38.6	30.7	....	45
134,105	554,813	1,691 32	411 90	1 37	52.4	24.2	....	46
768,824	4,671,243	2,684 62	441 85	1 49	37.4	16.4	71,184 tons.	47
158,741	1,120,084	3,209 41	424 44	1 51	53.1	14.3	26,114,145 rolls.	48
2,653,246	10,362,696	1,195 51	306 10	1 04	38.9	25.6	420,548,723 cigars.	49
98,563	217,460	1,156 70	524 27	1 82	38.5	45.3	....	50
742,246	6,922,914	3,068 67	329 01	1 09	77.1	10.7	....	51
604,789	2,523,904	1,125 74	269 75	90	49.0	24.0	....	52
78,307	232,121	1,349 54	455 27	1 56	27.8	33.7	....	53
237,666	604,307	1,029 48	404 88	1 50	12.0	39.3	51,882,647 bricks.	54
681,720	1,609,052	862 76	365 53	1 69	10.3	42.4	223,155,408 bricks.	55
1,602,426	3,560,462	931 33	419 15	1 40	22.2	45.0	666,863 tons.	56
280,065	520,415	681 17	366 58	1 44	5.4	53.8	59,951 tons.	57
565,623	888,733	569 70	362 58	1 48	7.8	63.6	265,796 squares.	58
4,570,920	10,120,232	1,017 82	459 71	1 73	20.3	45.2	....	59
1,759,101	15,059,504	3,392 54	396 28	1 47	62.0	11.7	1,487,228 dozens.	60
1,299,922	5,713,651	1,648 01	374 94	1 27	55.6	22.8	3,935,684 pairs.	61

YEAR 1900.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
62.	Suspenders, ...	2	$150,000	$440,000	298	212
63.	Hats and caps, ...	3	360,735	508,555	282	614
64.	Fur and felt hats, ...	4	3,077,842	729,924	309	1,687
65.	Wool hats, ...	7	462,722	471,032	294	563
66.	Umbrellas and parasols, ...	4	353,000	769,178	306	506
67.	Dress trimmings, braids, etc.,	8	1,411,475	1,029,684	302	1,745
68.	Shirts and shirt waists, ...	9	979,700	1,411,543	299	2,338
69.	Neckwear, ...	3	135,000	247,396	308	189
70.	Cotton and woolen cloths, ..	24	4,032,930	4,519,100	278	5,724
71.	Carpets, ...	17	3,624,415	3,512,455	297	2,794
72.	Cotton goods, ...	16	3,313,177	1,813,000	290	2,228
73.	Woolen and worsted cassimeres, ...	11	1,382,000	1,754,645	289	1,927
74.	Woolen and worsted fabrics,	16	3,516,532	4,110,454	293	3,917
75.	Woolen and worsted yarn, ..	12	2,738,000	2,370,290	279	1,641
76.	Rugs, yarns, etc., ...	5	5,406,791	2,059,524	292	3,170
77.	Carpet yarns, ...	11	1,041,068	1,188,499	277	670
78.	Cotton yarns, ...	7	1,311,543	987,430	295	870
79.	Worsted, woolen and cotton yarns, ...	10	2,720,252	2,887,072	294	2,210
80.	Woolen blankets, flannels, etc., ...	5	853,909	737,822	303	894
81.	Lace goods, ...	3	886,044	384,509	303	1,251
82.	Chenille goods, ...	3	515,000	401,696	301	654
83.	Upholstery goods, ...	10	2,112,546	1,546,240	269	2,128
84.	Knit goods, underwear, ...	13	2,096,610	2,926,399	291	3,188
85.	Hosiery, ...	31	3,117,842	2,634,225	287	6,593
86.	Silk, broad goods, thrown-silk, yarns, etc., ...	6	2,102,500	4,598,479	282	3,790
87.	Silk, broad goods and ribbons, ...	2	1,700,000	1,128,292	299	1,750
88.	Silk—Ribbons, ...	4	504,168	478,708	283	728
	Total, ...	801	$256,952,657	$183,881,071	288	186,9[illegible]6

YEAR 1900.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
$76,250	$624,000	$2,493 40	$359 67	$1 21	70.5	12.2	266,000 dozens.	62
211,921	901,917	1,468 92	345 15	1 22	56.4	23.5	111,091 dozens.	63
808,461	2,494,914	1,478 90	479 23	1 55	29.3	32.4	78,437 dozens.	64
217,479	931,034	1,653 70	386 29	1 31	50.6	23.4	271,322 dozens.	65
135,101	1,134,223	2,241 55	267 00	87	67.8	11.9	865,998 pieces.	66
533,502	2,195,940	1,258 42	305 73	1 01	46.9	24.3	....	67
733,667	2,808,677	1,201 32	313 80	1 05	50.3	26.1	398,536 dozens.	68
69,247	414,292	2,192 02	366 39	1 19	59.7	16.7	....	69
1,994,236	8,183,908	1,429 75	348 40	1 25	55.2	29.4	....	70
1,162,693	5,790,677	2,072 54	416 14	1 40	60.7	20.1	13,510,867 yards.	71
1,111,846	3,724,764	1,155 68	344 97	1 19	48.7	29.9	....	72
691,354	3,421,168	1,775 39	358 77	1 24	51.2	20.2	....	73
1,356,306	7,042,519	1,797 04	346 26	1 18	58.4	19.3	....	74
531,039	4,239,957	2,583 76	323 61	1 16	55.9	12.5	9,383,095 pounds.	75
1,173,598	4,552,504	1,436 12	370 22	1 27	45.2	25.8	....	76
244,411	1,737,441	2,593 20	364 79	1 32	68.4	14.1	14,337,344 pounds.	77
261,937	1,568,971	1,803 41	301 08	1 02	62.9	16.7	8,941,662 pounds.	78
653,421	4,424,815	2,002 18	295 67	1 00	65.2	14.8	7,076,277 pounds.	79
323,711	1,676,132	1,874 87	362 09	1 20	44.0	19.3	....	80
372,460	1,337,964	1,069 51	297 73	98	28.7	27.8	....	81
251,665	728,013	1,113 17	384 81	1 28	55.2	34.6	....	82
842,390	3,153,140	1,481 74	395 86	1 47	49.0	26.7	....	83
811,968	4,330,995	1,358 53	254 73	88	67.5	18.7	....	84
1,796,880	5,816,615	862 24	272 54	95	45.3	30.9	5,939,122 dozens.	85
896,322	6,319,225	1,667 34	236 50	84	72.8	14.2	....	86
465,000	2,784,047	1,590 88	265 71	89	40.5	16.7	6,388,130 yards.	87
221,341	1,034,713	1,503 73	304 04	1 07	43.7	20.2	15,209,686 yards.	88
$81,828,899	$255,819,108	$1,903 42	$437 74	$1 52	51.7	23.0	....	

YEAR 1901.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
1.	Steel castings,	7	$5,394,265	$574,406	302	1,478
2.	Steel billets, slabs, blooms, etc.,	4	3,791,119	14,531,245	290	1,838
3.	Tool steel, etc.,	3	1,050,000	126,488	295	167
4.	Iron and steel forgings,	7	585,000	281,056	278	482
5.	Iron specialties,	2	55,500	53,750	301	53
6.	Malleable iron,	4	1,594,090	873,539	286	1,965
7.	Bolts, nuts, etc.,	8	2,377,009	1,431,237	306	1,573
8.	Wire nails, rivets, etc.,	4	535,000	443,771	301	255
9.	Tacks and small nails,	4	158,500	70,748	280	142
10.	Wire,	5	618,100	216,782	302	258
11.	Wire rope,	2	1,400,000	1,089,791	308	393
12.	Wire goods,	5	169,989	112,779	294	242
13.	Wagon and carriage axles and springs,	6	618,642	324,275	277	618
14.	Scales, etc.,	4	217,600	126,852	293	183
15.	Stoves, ranges, heaters, etc.,	37	7,348,895	1,255,401	249	3,773
16.	Bath boilers, tanks, etc.,	2	59,000	49,704	304	41
17.	Hardware specialties,	14	3,971,920	951,254	296	3,133
18.	Edge tools,	12	1,725,640	500,219	297	1,097
19.	Wrenches, picks, etc.,	5	575,000	225,495	281	357
20.	Locomotives and cars built and repaired.	3	1,520,800	6,483,061	304	7,498
21.	Wrought iron pipe and tubes,	5	14,101,131	15,141,057	284	6,574
22.	Cast iron pipe,	3	916,776	1,254,082	315	841
23.	Brass, copper and bronze goods,	19	2,161,666	2,517,719	305	1,760
24.	Iron and steel bridges,	7	1,951,050	3,802,840	309	2,076
25.	Locomotives, stationery engines, etc.,	9	15,440,434	12,289,340	303	13,298
26.	Engines, boilers, etc.,	10	4,337,000	2,489,348	303	2,533
27.	Cars, springs, axles and railway supplies,	12	23,482,047	18,693,414	308	9,737
28.	Iron vessels and engines,	3	12,247,131	5,978,086	330	6,268

YEAR 1901.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
$734,578	$2,542,494	$1,720 23	$497 01	$1 65	22.6	28.9	30,501 tons.	1
1,411,838	17,992,938	9,789 41	768 14	2 65	81.0	7.8	863,499 tons.	2
131,830	664,097	3,976 63	789 40	2 68	19.0	19.9	2,424 tons.	3
255,175	754,797	1,565 97	529 41	1 90	37.2	33.8	9,401 tons.	4
25,372	105,750	1,995 28	478 72	1 59	50.8	24.0	1,265 tons.	5
939,514	2,153,732	1,130 57	493 18	1 72	40.6	43.6	33,182 tons.	6
571,990	2,515,995	1,599 49	363 63	1 19	57.1	22.7	41,183 tons.	7
115,167	795,616	3,120 06	451 64	1.50	55.8	14.5	15,159 tons.	8
49,715	200,528	1,412 17	350 11	1 25	35.3	24.8	2,311 tons.	9
107,069	459,569	1,781 28	415 00	1 37	47.2	23.3	4,889 tons.	10
169,682	1,693,920	4,310 23	431 76	1 40	64.4	10.0	6,707 tons.	11
72,771	376,397	1,555 36	300 70	1 02	30.0	19.3	....	12
306,789	867,646	1,403 96	496 42	1 79	37.4	35.4	....	13
111,951	400,587	2,189 00	611 75	2 09	31.7	27.9	....	14
2,084,170	5,048,054	1,337 94	552 39	2 22	24.8	41.3	....	15
20,030	95,958	2,180 86	455 23	1 50	51.8	20.9	....	16
1,349,901	3,618,381	1,154 92	430 87	1 46	26.3	37.3	....	17
494,080	1,488,852	1,357 20	450 39	1 52	33.6	33.2	....	18
183,238	713,089	1,997 45	513 27	1 83	31.6	25.7	....	19
4,953,043	11,622,675	1,550 10	612 57	2 02	55.8	39.5	....	20
3,301,349	27,381,482	4,165 12	502 18	1 77	55.3	12.1	410,878 tons.	21
402,535	2,004,285	2,382 22	478 64	1 52	62.6	20.0	78,122 tons.	22
845,903	4,069,549	2,312 24	480 62	1 58	61.9	20.8	....	23
1,176,736	6,432,504	3,098 51	566 83	1 83	59.1	18.3	....	24
8,314,869	27,094,502	2,037 49	625 27	2 06	45.4	30.7	....	25
1,425,785	5,100,778	2,013 73	562 88	1 86	48.8	27.9	....	26
5,245,106	28,678,934	2,945 35	538 68	1 77	65.0	18.3	....	27
3,587,294	10,619,270	1,694 24	572 32	1 73	56.3	33.8	....	28

YEAR 1901.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
29.	Boilers, tanks, stacks, etc.,..	21	2,640,108	2,567,205	298	2,135
30.	Machinery, ...	21	11,451,866	3,825,721	307	6,342
31.	Foundries and machine shops,	25	4,236,490	2,080,142	303	3,622
32.	Files, etc., ...	2	515,000	118,953	288	415
33.	Saws, ...	3	334,000	44,758	288	57
34.	Plumbers' supplies, ...	3	2,274,610	485,511	332	1,086
35.	Electrical supplies, ...	4	18,488,343	5,696,529	300	7,212
36.	Shovels, spades, scoops, etc.,	8	766,100	541,074	283	592
37.	Safes and vault doors, ...	2	178,262	148,595	303	224
38.	Metal and metallic goods, ...	3	390,000	99,610	294	252
39.	Building and structural iron work, ...	2	833,950	3,327,881	306	2,286
40.	Iron chains, ...	5	351,174	239,113	290	288
41.	Iron fences and railings, ...	7	113,628	206,195	306	220
42.	Agricultural implements, ...	12	2,189,000	1,494,064	302	1,594
43.	Steam pumps, ...	2	503,522	178,558	302	231
44.	Bicycles, ...	3	240,000	139,241	274	97
45.	Pianos and organs, ...	2	358,081	83,646	296	150
46.	Tinware, ...	5	578,000	337,778	272	461
47.	Paper manufactories, ...	8	5,799,229	1,776,599	293	1,725
48.	Wall paper, ...	4	800,000	650,626	285	371
49.	Cigars, ...	46	4,071,578	3,965,446	294	8,866
50.	Book binding, ...	3	140,000	95,214	290	188
51.	Cordage, ropes, twine, etc.,	5	3,510,000	5,676,078	300	2,291
52.	Paper, paper boxes, envelopes, etc., ...	27	1,512,207	1,158,423	301	2,138
53.	Pottery, ...	2	505,000	72,323	304	171
54.	Paving brick, ...	7	638,707	37,076	234	553
55.	Building brick, ...	35	3,652,539	181,600	230	1,954
56.	Fire brick, ...	18	2,998,426	724,698	298	3,787
57.	Slate roofing, etc., tonnage,..	6	1,043,453	42,098	268	907
58.	Slate roofing, etc., squares,..	14	553,814	86,468	254	1,578
59.	Window glass, bottles, and table goods, ...	22	13,706,456	1,790,190	256	8,820
60.	Glazed and chrome kid, ...	7	5,931,303	9,553,784	298	4,783
61.	Men's, women's, misses and children's shoes, ...	15	2,490,918	3,346,106	299	3,524

YEAR 1901.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
1,060,002	4,758,297	2,228 71	496 49	1 66	53.9	22.3	....	29
3,497,092	10,493,408	1,654 59	551 42	1 80	36.5	33.3	....	30
1,975,184	5,911,565	1,632 12	545 33	1 80	35.2	33.4	....	31
154,565	589,335	1,420 09	372 45	1 29	20.2	26.2	....	32
33,271	128,426	2,253 09	583 70	2 03	34.9	25.9	....	33
527,899	1,431,561	1,318 19	486 09	1 46	23.9	36.9	....	34
4,116,501	16,297,597	2,259 79	570 78	1 90	34.9	25.3	....	35
289,145	1,612,469	2,723 76	488 42	1 73	33.5	17.9	....	36
101,832	333,538	1,489 00	454 60	1 50	44.6	20.5	....	37
117,163	344,926	1,368 75	464 93	1 58	28.9	33.9	....	38
1,199,639	6,403,461	2,801 16	524 78	1 72	51.9	18.7	....	39
142,794	561,193	1,948 59	495 81	1 71	42.6	25.4	5,956 tons.	40
103,420	379,015	1,722 80	470 09	1 54	54.4	27.3	....	41
817,229	3,413,376	2,141 37	512 69	1 70	43.7	23.9	....	42
160,245	411,468	1,781 25	693 70	2 30	43.4	38.9	....	43
55,269	197,218	2,033 17	569 78	2 08	70.6	28.0	....	44
65,460	197,752	1,318 35	436 40	1 48	42.3	33.1	....	45
170,087	639,243	1,386 64	368 95	1 36	52.8	26.6	....	46
738,509	4,567,498	2,647 82	428 12	1 46	38.9	16.2	71,878 tons.	47
157,042	1,046,365	2,820 39	423 29	1 48	62.2	15.0	29,930,030 rolls.	48
2,698,783	19,344,882	1,166 80	304 40	1 03	38.3	26.1	400,893,737 cigars.	49
103,717	236,637	1,258 71	551 69	1 90	40.2	43.7	....	50
785,781	7,446,401	3,246 03	342 54	1 14	76.2	10.6	....	51
597,941	2,493,536	1,166 29	279 67	98	46.5	24.0	....	52
83,136	246,060	1,439 00	486 17	1 60	29.4	33.8	....	53
206,868	412,809	746 49	374 08	1 60	9.0	50.1	....	54
733,827	1,722,242	881 39	375 55	1 63	10.5	42.6	213,696,165 bricks.	55
1,622,430	3,221,632	850 71	428 42	1 44	22.5	50.4	693,977 tons.	56
362,028	729,002	808 75	399 15	1 49	5.8	49.7	68,902 tons.	57
615,681	967,230	612 95	390 16	1 54	8.9	63.7	286,526 squares.	58
3,971,494	8,723,430	989 05	450 28	1 76	20.5	45.5	....	59
2,111,284	19,364,997	4,048 71	441 41	1 48	49.3	10.9	1,851,886 dozens.	60
1,347,012	5,773,618	1,638 37	382 24	1 28	58.0	23.3	3,914,210 pairs.	61

YEAR 1901.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

No.	Character of Industries.	Number of establishments considered.	Capital invested in plants and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
62.	Suspenders,	2	$170,500	$476,000	298	198
63.	Hats and caps,	3	375,548	467,440	287	691
64.	Fur and felt hats,	4	3,074,328	873,632	308	2,060
65.	Wool hats,	7	489,264	386,829	282	538
66.	Umbrellas and parasols,	4	350,819	907,717	306	522
67.	Dress trimmings, braids, etc.,	8	1,529,063	958,843	292	1,660
68.	Shirts and shirt waists,	9	967,900	1,403,516	299	2,419
69.	Neckwear,	3	135,850	222,189	308	181
70.	Cotton and woolen cloths,	24	4,198,393	4,452,102	280	5,341
71.	Carpets,	37	3,628,328	3,882,593	298	2,801
72.	Cotton goods,	16	3,363,442	1,863,117	287	3,119
73.	Woolen and worsted cassimeres,	11	1,382,000	2,014,917	278	1,971
74.	Woolen and worsted fabrics,	16	3,711,989	3,701,075	291	3,294
75.	Woolen and worsted yarns,	12	2,749,500	2,999,031	292	1,658
76.	Rugs, yarns, etc.,	5	5,161,001	2,047,869	279	3,209
77.	Carpet yarns,	11	1,074,009	1,249,013	291	688
78.	Cotton yarns,	7	1,426,207	837,474	285	720
79.	Worsted, woolen and cotton yarns,	10	2,839,511	2,715,543	273	2,277
80.	Woolen blankets, flannels, etc.,	5	851,526	887,731	291	912
81.	Lace goods,	3	913,154	438,178	302	1,238
82.	Chenille goods,	3	640,000	426,241	304	680
83.	Upholstery goods,	10	2,141,085	1,537,781	287	2,216
84.	Knit goods, underwear,	13	2,161,429	2,537,073	282	2,980
85.	Hosiery,	31	3,303,176	2,737,834	290	6,756
86.	Silk—Broad goods, thrown-silk, yarns, etc.,	6	2,097,500	3,646,366	262	4,033
87.	Silk—Broad goods and ribbons,	2	1,700,000	1,202,479	301	2,400
88.	Silk—Ribbons,	4	556,521	676,037	302	909
	Total,	801	$253,190,931	$188,207,662	293	192,972

YEAR 1901.

RECAPITULATION OF COMPARATIVE TABLE BY YEARS, 1896 SERIES.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.	Total production in tons or given quantity.	No.
61,400	701,000	3,540 40	310 10	1 04	67.9	8.8	450,000 dozens.	62
244,900	1,046,651	1.514 69	354 41	1 23	44.7	23.4	139,964 dozens.	63
980,610	2,954,738	1,434 34	476 02	1 55	29.6	33.2	90,025 dozens.	64
187,791	788,215	1,465 08	349 06	1 24	49.1	23.8	241,180 dozens.	65
144,419	1,243,643	2,382 46	276 66	90	73.0	11.6	979,913 pieces.	66
494,333	2,034,319	1,218 89	296 18	1 01	47.1	24.3	....	67
774,447	2,886,635	1,193 32	320 15	1 07	48.6	26.8	389,018 dozens.	68
57,388	359,704	1,987 31	317 06	1 03	61.8	15.9	....	69
1,878,847	7,925,125	1,483 83	351 78	1 26	56.2	23.7	....	70
1,254,800	6,553,397	2,339 66	447 98	1 50	59.3	19.2	14,978,827 yards.	71
1,045,654	3,682,324	1,183 27	336 00	1 17	50.6	28.4	....	72
694,124	3,854,917	1,955 82	352 17	1 27	52.3	18.0	....	73
1,138,513	6,220,518	1,888 44	345 63	1 19	59.5	18.3	....	74
578,871	4,487,135	2,706 35	349 14	1 19	66.8	12.9	9,156,971 pounds.	75
1,179,748	4,241,326	1,321 70	367 64	1 32	48.3	27.8	....	76
265,572	1,797,185	2,612 19	386 01	1 33	63.9	14.8	14,603,056 pounds.	77
229,243	1,328,065	1,844 53	318 39	1 12	63.1	17.3	7,935,951 pounds.	78
616,151	4,069,413	1,787 18	270 60	99	66.7	15.1	7,151,229 pounds.	79
299,492	1,670,231	1,831 39	328 39	1 13	53.2	17.9	....	80
382,726	1,432,392	1,157 02	309 96	1 02	30.6	26.7	....	81
270,854	791,504	1,163 98	398 32	1 31	53.9	34.2	....	82
914,677	3,339,940	1,507 19	412 76	1 44	46.0	27.4	....	83
766,663	3,950,409	1,325 64	257 27	91	64.2	19.4	....	84
1,874,579	6,082,610	900 33	277 47	96	45.0	30.8	6,166,032 dozens.	85
886,216	5,664,636	1,404 57	219 74	84	64.4	15.6	....	86
542,822	3,207,575	1,336 49	226 18	75	37.5	16.9	3,163,175 yards.	87
313,691	1,419,536	1.561 65	345 09	1 14	47.6	22.1	23,694,069 yards.	88
$86,828,341	$370,625,709	$1,920 62	$449 95	$1 53	50.8	23.4	....	

RESUME.

TOTAL, SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Years.	Character of Industries.	Number of establishments considered.	Capital invested in plants, and working capital.	Cost of basic material.	Average number of days in operation.	Number of workmen employed.
1896,	....	801	$200,109,865	$92,612,814	270	131,260
1897,	....	801	201,889,872	102,239,370	286	137,027
1898,	....	801	207,219,841	115,605,138	286	153,0[illegible]6
1899,	....	801	239,377,197	165,089,595	288	175,641
1900,	....	801	256,952,657	183,881,071	288	186,936
1901,	....	801	253,190,931	188,207,662	293	192,972

RESUME.

TOTAL, SAME ESTABLISHMENTS FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Aggregate wages paid to workmen.	Market value of production.	Average value of production for each workman employed.	Average yearly earnings.	Average daily wage.	Relative per cent. basic material to value of production.	Relative per cent. wages to value of production.
$50,084,767	$188,038,106	$1,432 56	$381 56	$1 41	49.2	26.6
52,504,050	205,222,150	1,497 75	383 17	1 34	49.3	25.6
60,377,592	240,813,543	1,572 96	394 38	1 38	48.1	25.1
76,669,979	324,725,616	1,848 80	436 52	1 52	50.8	23.6
81,828,899	355,819,108	1,903 42	437 74	1 52	51.7	23.0
86,828,341	370,625,709	1,920 62	449 95	1 53	50.8	23.4

COMPARISON OF TOTALS, ALL ESTABLISHMENTS (801) FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Years.	Total number of establishments considered.	Totals.	Increase (+) or decrease (—) as compared with preceding year.		Increase (+) or decrease (—) 1901 as compared with 1896.	
			Amounts.	Percentage.	Amounts.	Percentage.
CAPITAL INVESTED.						
1896,	801	$200,109,865	$	....	$	....
1897,	801	201,889,872	+1,780,007	+0.9	....	....
1898,	801	207,219,841	+5,329,969	+2.6	....	....
1899,	801	239,377,197	+32,157,356	+15.5	....	....
1900,	801	256,952,657	+17,575,460	+7.3	....	....
1901,	801	253,190,931	—3,761,726	—1.4	+53,081,066	+26.5
VALUE OF BASIC MATERIAL.						
1896,	801	$92,612,814	....	....	....	....
1897,	801	102,239,370	+9,626,556	+10.4	....	....
1898,	801	115,605,138	+13,365,768	+13.1	....	....
1899,	801	165,089,595	+49,484,457	+42.8	....	....
1900,	801	183,881,071	+18,791,476	+11.4	....	....
1901,	801	188,207,662	+4,326,591	+2.4	+95,594,848	+103.2
AVERAGE NUMBER OF DAYS IN OPERATION.						
1896,	801	270	....	....	....	....
1897,	801	286	+16	+5.9	....	....
1898,	801	286	....	....	....	....
1899,	801	288	+2	+.7	....	....
1900,	801	288	....	....	....	....
1901,	801	293	+5	+1.7	+23	+8.5
NUMBER OF PERSONS EMPLOYED.						
1896,	801	131,260	....	....	....	....
1897,	801	137,027	+5,767	+4.4	....	....
1898,	801	153,096	+16,069	+11.7	....	....
1899,	801	175,641	+22,545	+14.7	....	....
1900,	801	186,936	+11,295	+6.4	....	....
1901,	801	192,972	+6,036	+3.2	+61,712	+47.0

COMPARISON OF TOTALS, ALL ESTABLISHMENTS (801) FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Years.	Total number of establishments considered.	Totals.	Increase (+) or decrease (—) as compared with preceding year.		Increase (+) or decrease (—) 1901 as compared with 1896.	
			Amounts.	Percentage.	Amounts.	Percentage.
AGGREGATE AMOUNT OF WAGES PAID.						
1896, ...	801	$50,084,767	$	....	$	....
1897, ...	801	52,504,050	+2,419,283	+4.8	....	....
1898, ...	807	60,377,592	+7,873,542	+15.0	....	....
1899, ...	801	76,669,979	+16,292,387	+27.0	....	....
1900, ...	801	81,828,899	+5,158,920	+6.7	....	....
1901, ...	801	86,828,341	+4,999,442	+6.1	+36,743,574	+73.4
MARKET VALUE OF PRODUCTION.						
1896, ...	801	$188,038,106	....	....	....	....
1897, ...	801	205,232,150	+17,194,044	+9.1	....	....
1898, ...	801	240,813,543	+35,581,393	+17.3	....	....
1899, ...	801	324,725,616	+83,912,073	+34.8	....	....
1900, ...	801	355,819,108	+31,093,492	+9.6	....	....
1901, ...	801	370,625,709	+14,806,601	+4.2	+182,587,603	+97.1
AVERAGE YEARLY EARNINGS.						
1896, ...	801	$381 56	....	....	....	....
1897, ...	801	383 17	+1 61	+.4	....	....
1898, ...	801	394 38	+11 21	+2.9	....	....
1899, ...	801	436 52	+42 14	+10.7	....	....
1900, ...	801	437 74	+1 22	+.3	....	....
1901, ...	801	449 95	+12 21	+2.8	+68 39	+17.9
AVERAGE DAILY WAGE.						
			Cts.		Cts.	
1896, ...	801	$1 41	....	....	....	....
1897, ...	801	1 34	—07	—5.0	....	....
1898, ...	801	1 38	+04	+3.0	....	....
1899, ...	801	1 52	+14	+10.1	....	....
1900, ...	801	1 52	....	....	....	....
1901, ...	801	1 53	+01	+.7	+12	+8.5

COMPARISON OF TOTALS, ALL ESTABLISHMENTS (801) FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Years.	Total number of establishments considered.	Totals.	Increase (+) or decrease (—) as compared with preceding year.		Increase (+) or decrease (—) 1901 as compared with 1896.	
			Amounts.	Percentage.	Amounts.	Percentage.
VALUE OF PRODUCTION DURING THE YEAR TO EACH EMPLOYE.						
1896, ...	801	$1,432 56	$	....	$	....
1897, ...	801	1,497 75	+65 19	+4.5	....	....
1898, ...	801	1,572 96	+75 21	+5.0	....	....
1899, ...	801	1,848 80	+275 84	+17.6	....	....
1900, ...	801	1,903 42	+54 62	+2.9	....	....
1901, ...	801	1,920 62	+17 20	+.9	+488 06	+34.1
RELATIVE PER CENT. BASIC MATERIAL TO VALUE OF PRODUCTION.						
1896, ...	801	49.2	....	....	....	....
1897, ...	801	49.3	+.1	....	....	....
1898, ...	801	48.1	—1.2	....	....	....
1899, ...	801	50.8	+2.7	....	....	....
1900, ...	801	51.7	+.9	....	....	....
1901, ...	801	50.8	—.9	....	+1.6	....
RELATIVE PER CENT. WAGES TO VALUE OF PRODUCTION.						
1896, ...	801	26.6	....	....	....	....
1897, ...	801	25.6	—1.0	....	....	....
1898, ...	801	25.1	—.5	....	....	....
1899, ...	801	23.6	—1.5	....	....	....
1900, ...	801	23.0	—.6	....	....	....
1901, ...	801	23.4	+.4	....	—3.2	....

PIG IRON PRODUCTION IN PENNSYLVANIA FOR 1901.

Capital invested,	$152,075,575
Gross tons of production,	7,364,295
Realized value,	$106,883,000
Average realized value per ton,	$14 52
Value of basic material, ore and scrap or cinder only (fuel, limestone, management, office help and all other items of expense are not considered,)	$53,511,173
Average cost of basic material per ton,	$7 27
Average days in operation,	323
Total number of workmen employed,	14,749
Aggregate wages paid to these workmen,	$8,646,479
Average earnings for the year,	$586 24
Average daily wage,	$1 85
Cost of labor per ton,	$1 17
Tonnage per man per day,	1.55

COMPARISON OF PIG IRON PRODUCTION FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Years.	Totals.	Increase (+) or decrease (—) as compared with preceding year.		Increase (+) or decrease (—) 1901 as compared with 1896.	
		Amounts.	Percentage.	Amounts.	Percentage.
GROSS TONS PRODUCED.					
1896,	4,026,350	....	....	....	....
1897,	4,617,634	+591,284	+14.7	....	....
1898,	5,367,979	+750,345	+16.2	....	....
1899,	6,542,998	+1,175,019	+21.9	....	....
1900,	6,371,688	—171,310	—2.6	....	....
1901,	7,364,295	+992,607	+15.6	+3,337,945	+82.9
REALIZED VALUE OF PRODUCTION.					
1896,	$45,172,039	$	....	$	....
1897,	48,884,854	+3,712,815	+8.2	....	....
1898,	53,331,228	+4,446,374	+9.1	....	....
1899,	98,203,803	+44,872,575	+84.1	....	....
1900,	105,449,923	+7,246,120	+7.4	....	....
1901,	106,883,000	+1,433,077	+1.4	+61,710,961	+136.7
AVERAGE REALIZED VALUE PER TON.					
1896,	$11 21	....	....	....	....
1897,	10 58	—0 63	—5.6	....	....
1898,	9 94	—0.64	—6.0	....	....
1899,	15 01	+5.07	+51.0	....	....
1900,	16 55	+1.54	+10.3	....	....
1901,	14 52	—2.03	—12.0	+3.31	+29.5
AGGREGATE COST OF BASIC MATERIAL.					
1896,	$26,251,420	$	....	$	....
1897,	29,962,533	+3,711,113	+14.1	....	....
1898,	29,377,657	—584,876	—1.9	....	....
1899,	38,861,664	+9,484,007	+32.5	....	....
1900,	51,090,782	+12,229,118	+31.5	....	....
1901,	53,511,173	+2,420,391	+4.7	+27,259,753	+103.8

COMPARISON OF PIG IRON PRODUCTION FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Years.	Totals.	Increase (+) or decrease (—) as compared with preceding year.		Increase (+) or decrease (—) 1901 as compared with 1896.	
		Amounts.	Percentage.	Amounts.	Percentage.
AVERAGE NUMBER OF WORKMEN EMPLOYED.					
1896,	11,580	....	....	....	....
1897,	11,272	—308	—2.7	....	....
1898,	11,911	+639	+5.6	....	....
1899.	15,347	+3,436	+28.8	....	....
1900,	15,785	+438	+2.8	....	....
1901,	14,749	—1.036	—6.6	+3.169	+27.4
AVERAGE DAYS OF EMPLOYMENT.					
1896,	289	....	....	....	....
1897,	306	+17	+5.9	....	....
1898,	336	+30	+9.8	....	....
1899,	327	—9	—2.7	....	....
1900,	323	—4	—1.2	....	....
1901,	323	....	....	+34	+11.8
AGGREGATE AMOUNT OF WAGES PAID.					
1896,	$4,589,165	$	....	$	....
1897,	4,676,970	+87,805	+1.9	....	....
1898,	5,268,503	+591,533	+12.6	....	....
1899,	7,599,533	+2,331,030	+44.2	....	....
1900,	8,500,194	+900,661	+11.8	....	....
1901,	8,646,479	+146,285	+1.7	+4,057,314	+88.4
AVERAGE YEARLY EARNINGS.					
1896,	$396 50	$	....	$	....
1897,	414 92	+18 62	+4.7	....	....
1898,	442 32	+27.40	+6.6	....	....
1899,	495 18	+52.86	+11.9	....	....
1900,	538 50	+43 32	+8.8	....	....
1901,	586 24	+47 74	+8.9	+189.94	+47.9

COMPARISON OF PIG IRON PRODUCTION FOR THE YEARS 1896, 1897, 1898, 1899, 1900 AND 1901.

Years.	Totals.	Increase (+) or decrease (—) as compared with preceding year.		Increase (+) or decrease (—) 1901 as compared with 1896.	
		Amounts.	Percentage.	Amounts.	Percentage.
AVERAGE DAILY WAGE.				Cents,	
1896,	$1 37	$	....	....	....
1897,	1 36	—01	—.7	... .	....
1898,	1 32	—04	—3.0	....	....
1899,	1 51	+.19	+14.4	....	....
1900,	1 67	+16	+10.6	....	....
1901,	1 85	+18	+10.8	+48	+35.0
AVERAGE COST OF LABOR PER TON.				Cents,	
1896,	$1 14	$	....	....	....
1897,	1 01	—13	—11.4	....	....
1898,	98	—03	—2.9	....	....
1899,	1 16	+18	+18.3	....	....
1900,	1 33	+17	+14.7	....	....
1901,	1 17	—16	—12.0	+03	+2.6
AVERAGE COST OF BASIC MATERIAL PER TON.				Cents,	
1896,	$6 52	$	....	....	....
1897,	6 48	—04	—.6	....	....
1898,	5 48	—1 00	—15 4	....	....
1899,	5 94	+46	+8.4	....	....
1900,	8 02	+2 08	+35.2	....	....
1901,	7 27	—75	—9.4	+75	+11.5

PRODUCTION OF PIG IRON BY COUNTIES AND RELATIVE PER CENT.

	Gross Tons.	Per cent.
Allegheny,	3,685,665	50.048
Mercer,	622,877	8.458
Cambria,	511,533	6.946
Lebanon,	382,436	5.193
Lawrence,	359.260	4.878
Dauphin,	312,400	4.242
Berks,	265,065	3.599
Lehigh,	239,579	3.253
Northampton,	179,647	2.439
Montgomery,	170,816	2.319
Bedford,	99,534	1.351
Lackawanna,	80,241	1.089
Fayette,	77,914	1.058
Jefferson,	68,342	.928
Armstrong,	55,000	.747
Delaware,	42,003	.570
Centre,	42,000	.570
Cameron,	37,723	.519
Westmoreland,	37,347	.507
Carbon,	32,227	.438
Bucks,	30,025	.407
York,	15,154	.205
Perry,	13,600	.184
Mifflin,	1,954	.026
Huntingdon,	1,953	.026
Totals,	7,364,295	100

PRODUCTION OF STEEL FOR 1901 BY ESTABLISHMENTS NOT HAVING ROLLING MILLS.

Capital invested,		$6,579,822
Average days in operation,		306
Average number of working people employed,		4,443
Aggregate wages paid these working people,		$2,727,592
Steel ingots and casting:		
Bessemer (acid), gross tons,	15,005	
Open hearth (acid), gross tons,	59,001	
Open hearth (basic), gross tons,	5,954	
Crucible and other processes, gross tons,	2,800	
Total tons,		82,760
Average yearly earnings,		$613 91
Average daily wage,		$2 00
Value of production,		$8,407,752

PRODUCTION OF STEEL IN PENNSYLVANIA FOR 1901.

	Gross Tons.
Bessemer,	4,319,144
Open hearth "acid process,"	736,720
Open hearth "basic process,"	2,818,108
Crucible and other processes,	85,748
Total,	7,959,720

PRODUCTION OF STEEL IN 1901 AS COMPARED WITH 1896, 1897, 1898, 1899 AND 1900.

Years.	Gross Tons.	Increase (+) or decrease (—) as compared with preceding year.		Increase (+) or decrease (—) 1901 as compared with 1896.	
		Amounts.	Percentage.	Amounts.	Percentage.
BESSEMER.					
1896,	2,292,814	....	....	....	....
1897,	2,848,204	+555,390	+24.2	....	....
1898,	3,357,684	+509,480	+17.9	....	....
1899,	3,971,835	+614,151	+18.3	....	....
1900,	3,488,569	—483,266	—12.2	....	....
1901,	4,319,144	+830,575	+23.8	+2,026,330	+88.4
OPEN HEARTH.					
1896,	1,009,608	....	....	....	....
1897,	1,421,373	+411,765	+40.8	....	....
1898,	1,848,732	+427,359	+30.1	....	....
1899,	2,398,210	+549,478	+29.7	....	....
1900,	2,702,968	+304,758	+12.7	....	....
1901,	3,554,828	+851,860	+31.5	+2,545,220	+252.1
CRUCIBLE AND OTHER PROCESSES.					
1896,	43,107	....	....	....	....
1897,	49,245	+6,138	+14.2	....	....
1898,	69,568	+20,323	+41.2	....	....
1899,	76,114	+6,546	+9.4	....	....
1900,	64,500	—11,614	—15.3	....	....
1901,	85,748	+21,248	+32.9	+42,641	+98.9
TOTAL PRODUCTION.					
1896,	3,345,529	....	....	....	....
1897,	4,318,622	+973,093	+29.0	....	....
1898,	5,275,984	+957,362	+22.2	....	....
1899,	6,446,159	+1,170,175	+22.2	....	....
1900,	6,256,775	—189,384	—2.9	....	....
1901,	7,959,720	+1,702,945	+27.2	+4,614,191	+137.9

PRODUCTION OF STEEL IN 1901 BY COUNTIES WITH RELATIVE PER CENT.

	Gross Tons.	Per cent.
Allegheny,	5,140,580	64.582
Cambria,	655,775	8.239
Dauphin,	426,787	5.362
Lackawanna,	351,845	4.420
Chester,	308,990	3.882
Lawrence,	267,174	3.357
Mercer,	217,518	2.733
Montgomery,	198,150	2.489
Westmoreland,	152,715	1.919
Northampton,	68,796	.864
Philadelphia,	61,111	.768
Delaware,	60,597	.761
Mifflin,	23,101	.290
Armstrong,	14,193	.178
Venango,	3,969	.050
York,	3,700	.046
Berks,	3,570	.045
Washington,	634	.008
Crawford,	275	.004
Beaver,	176	.002
Erie,	64	.001
Totals,	7,959,720	100

PRODUCTION OF ROLLED IRON AND STEEL IN PENNSYLVANIA FOR 1901 (GROSS TONS).

Capital invested,		$232,108,715
*Production (gross tons),		8,668,337
Classified as follows:		
Rails,	1,406,532	
Iron and steel structural shapes,	916,013	
Cut nails and cut spikes,	37,349	
†Plates and sheets including black plate for tinning,	1,590,502	
Other rolled products, including billets, sheet bar, tin bar, etc. not further finished by the mills reporting,	4,717,941	
Value not including the production of the tin plate works,		$298,284,259
Average number of workmen employed exclusive of the tin plate works,		86,086
Aggregate wages paid to these workmen,		$53,334,787
Average days in operation,		280
Average yearly earnings,		$619 55
Average daily wage,		$2 21
Average value per ton,		$35 30
Cost of labor per ton,		$6 31

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*For a better understanding of Production and Value, see Analysis of Rolled Iron and Steel.
†Includes 218,432 tons of black plate and other sheets made by the Tin Plate Works.

PRODUCTION OF ROLLED IRON AND STEEL, INCLUDING BLACK PLATE FOR TINNING, IN 1901, BY COUNTIES, WITH RELATIVE PER CENT.

	Gross Tons.	Per cent.
Allegheny,	5,095,608	58.784
Dauphin,	497,985	5.745
Cambria,	443,655	5.118
Montgomery,	339,617	3.918
Lawrence,	335,074	3.866
Lackawanna,	326,609	3.768
Westmoreland,	275,921	3.183
Chester,	271,742	3.135
Mercer,	263,861	3.044
Montour,	92,760	1.070
Lebanon,	86,528	.997
Berks,	86,405	.997
Lehigh,	84,157	.970
Philadelphia,	79,968	.923
Blair,	57,930	.668
Lancaster,	54,867	.633
Mifflin,	41,137	.475
Northumberland,	37,937	.438
Northampton,	36,781	.424
Washington,	32,646	.377
Columbia,	31,285	.361
Delaware,	24,817	.286

PRODUCTION OF ROLLED IRON AND STEEL, INCLUDING BLACK PLATE FOR TINNING, IN 1901, BY COUNTIES, WITH RELATIVE PER CENT.—Continued.

	Gross Tons.	Per cent.
Lycoming,	13,029	.150
Perry,	12,623	.146
Armstrong,	9,100	.105
Fayette,	7,848	.090
York,	6,840	.079
Bucks,	6,694	.077
Schuylkill,	6,364	.074
Greene,	4,048	.047
Beaver,	2,075	.024
Centre,	1,826	.021
Luzerne,	600	.007
Totals,	8,668,337	100

COMPARISON OF ROLLED IRON AND STEEL FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Years.	Totals.	Increase (+) or decrease (—) as compared with preceding year.		Increase (+) or decrease (—) 1901 as compared with 1896.	
		Amounts.	Percentage	Amounts.	Percentage.
CAPITAL INVESTED					
1896,	$123,951,317	$	....	$	....
1897,	129,500,796	+5,549,479	+4.5	....	....
1898,	134,126,188	+4,625,392	+3.6	....	....
1899,	144,428,965	+10,302,777	+7.7	....	....
1900,	184,006,675	+39,577,710	+27.4	....	....
1901,	232,108,715	+48,102,040	+26.1	+108,157,398	+87.2
IRON AND STEEL RAILS—PRODUCTION (GROSS TONS).					
1896,	674,651	....	....	....	....
1897,	973,518	+298,867	+44.3	....	....
1898,	1,069,365	+95,847	+9.8	....	....
1899,	1,231,979	+162,614	+15.2	....	....
1900,	1,198,098	—33,881	—2.7	....	....
1901,	1,406,532	+208,434	+17.4	+731,881	+108.5
PLATES AND SHEETS (GROSS TONS).					
1896,	630,861	....	....	....	....
1897,	679,133	+48,272	+7.7	....	....
1898,	899,364	+220,231	+32.4	....	....
1899,	1,100,303	+200,939	+22.3	....	....
1900,	1,598,034	+497,731	+45.2	....	....
1901,	1,590,502	—7,532	—.5	+959,641	+152.1
CUT NAILS AND CUT SPIKES (GROSS TONS).					
1896,	28,840	....	....	....	....
1897,	44,165	+15,325	+53.1	....	....
1898,	30,090	—14,075	—31.9	....	....
1899,	41,459	+11,369	+37.8	....	....
1900,	24,289	—17,170	—41.4	....	....
1901,	37,349	+13,060	+53.3	+8,509	+29.5

COMPARISON OF ROLLED IRON AND STEEL FOR THE YEARS, 1896, 1897, 1898, 1899, 1900 AND 1901.

Years.	Totals.	Increase (+) or decrease (—) as compared with preceding year.		Increase (+) or decrease (—) 1901 as compared with 1896.	
		Amounts.	Percentage.	Amounts.	centage. Per-
AVERAGE NUMBER OF DAYS IN OPERATION.					
1896,	251				
1897,	269	+18	+7.2		
1898,	278	+9	+3.3		
1899,	287	+9	+3.2		
1900,	272	—15	—5.2		
1901,	280	+8	+2.9	+29	+11.5
AVERAGE EARNINGS FOR THE YEAR.					
1896,	$444 89	$		$	
1897,	461 19	+16 30	+3.6		
1898,	495 81	+34 62	+7.5		
1899,	559 00	+63 19	+12.7		
1900,	573 97	+14 97	+2.7		
1901,	619 55	+45 58	+7.9	+174 66	+39.3
AVERAGE DAILY WAGE.		Cts.		Cts.	
1896,	$1 77				
1897,	1 71	—06	—3.4		
1898,	1 78	+07	+4.1		
1899,	1 95	+17	+9.5		
1900,	2 11	+16	+8 2		
1901,	2 21	+10	+4.7	+44	+2.5
AVERAGE COST OF LABOR PER TON.					
1896,	$6 34				
1897,	5 16	—1 18	—18 6		
1898,	5 03	—13	—2.5		
1899,	6 65	+62	+12.3		
1900,	6 26	—39	—5.9		
1901,	6 15	—11	—2.0	—19	—3.0

TIN PLATE.

PRODUCTION OF TIN PLATE (BLACK PLATE WORKS), IN PENNSYLVANIA FOR 1901.—(NET TONS.)

Number of plants in operation,	22
Capital invested,	$10,525,000
Production of black plate, in pounds,	435,628,000
Quantity of black plate tinned, in pounds,	377,430,000
Quantity of black plate not tinned, pounds,	58,198,000
Value of this black plate not tinned,	$1,940,486
Value of the tinned production,	$15,084,852
Total value of entire production tinned and untinned,	$17,025,338
Average value per hundred pounds of tinned production,	$4 00
Average value per ton of 2,000 pounds of black plate not tinned,	$66 69
Tonnage of sheets not black plate,	26,830
Value of sheets other than black plate,	$1,531,813
Average number of days in operation,	228
Average number of working people employed,	8,188
Aggregate amount of wages paid to the working people,	$4,593,561
Average earnings for the year,	$561 01
Average daily wage,	$2 46
Total number of hot mills,	164
Total number of tinning sets,	225
Daily capacity black plate, net tons,	1,229
Daily tinning capacity, net tons,	975

TIN PLATE.

BLACK PLATE WORKS, 1901, AS COMPARED WITH 1896, 1897, 1898, 1899 AND 1900.

Years.	Number of establishments in operation.	Totals.	Increase (+) or decrease (—) as compared with preceding year.		Increase (+) or decrease (—) 1901 as compared with 1896.	
			Amounts.	Percentage.	Amounts.	Percentage.
CAPITAL INVESTED.						
1896,	13	$3,627,275	$	....	$	....
1897,	15	5,017,127	+1,389,852	+38.3	....	....
1898,	18	7,903,000	+2,885,873	+57.5	....	....
1899,	21	8,150,000	+247,000	+3.1	....	....
1900,	17	9,771,888	+1,621,888	+19.9	....	....
1901,	22	10,525,000	+753,112	+7.8	+6,897,725	+190.2
QUANTITY, IN POUNDS, OF BLACK PLATE PRODUCED AND TINNED.						
1896,	13	97,814,762	....	....	....	....
1897,	15	179,705,766	+81,891,004	+83.7	....	....
1898,	18	222,528,000	+42,822,234	+23.8	....	....
1899,	21	292,164,734	+69,636,734	+31.3	....	....
1900,	17	264,306,000	—27,858,734	—9.5	....	....
1901,	22	377,430,000	+113,124,000	+42.8	+279,615,238	+285.9
QUANTITY OF POUNDS PRODUCED AND NOT TINNED.						
1896,	13	60,491,728	....	....	....	....
1897,	15	74,451,835	+13,960,107	+23.1	....	....
1898,	18	121,536,000	+47,084,165	+63.2	....	....
1899,	21	76,436,000	—45,100,000	—37.1	....	....
1900,	17	47,696,000	—28,740,000	—37.6	....	....
1901,	22	58,198,000	+10,502,000	+22.3	—2,293,728	—3.8
ENTIRE PRODUCTION OF BLACK PLATE, IN POUNDS, TINNED AND UNTINNED.						
1896,	13	158,306,490	....	....	....	....
1897,	15	254,157,601	+95,851,111	+60.5	....	....
1898,	18	344,064,000	+89,906,399	+35.4	....	....
1899,	21	368,600,734	+24,536,734	+7.1	....	....
1900,	17	312,002,000	—56,598,734	—15.4	....	....
1901,	22	435,628,000	+123,626,000	+39.6	+277,321,510	+175.2

TIN PLATE.

BLACK PLATE WORKS, 1901, AS COMPARED WITH 1896, 1897, 1898, 1899 AND 1900—Continued.

Years.	Number of establishments in operation.	Totals.	Increase (+) or decrease (—) as compared with preceding year.		Increase (+) or decrease (—) 1901 as compared with 1896.	
			Amounts.	Percentage.	Amounts.	Percentage.
VALUE OF TIN AND TERNE PLATE PRODUCED.						
1896, ...	13	$3,157,699	$	....	$	....
1897, ...	15	5,180,624	+2,022,925	+64.0	....	....
1898, ...	18	6,697,921	+1,517,297	+29.5	....	....
1899, ...	21	10,249,841	+3,551,920	+53.0	....	....
1900, ...	17	10,936,510	+686,669	+6.7	....	....
1901, ...	22	15,084,852	+4,148,342	+37.9	+11,927,153	+377.7
VALUE OF THE BLACK PLATE NOT TINNED.						
1896, ...	13	$1,480,112	$	....	....	....
1897, ...	15	1,657,297	+177,185	+11.9	....	....
1898, ...	18	2,646,314	+989,017	+59.7	....	....
1899, ...	21	1,902,691	—743,623	—28.1	....	....
1900, ...	17	1,654,387	—248,304	—13.0	....	....
1901, ...	22	1,940,486	+286,099	+17.3	+460,374	+31.0
VALUE OF ENTIRE PRODUCTION OF BLACK PLATE TINNED AND UNTINNED.						
1896, ...	13	$4,637,811	$	....	....	....
1897, ...	15	6,837,921	+2,200,110	+47.4	....	....
1898, ...	18	9,344,235	+2,506,314	+36.6	....	....
1899, ...	21	12,152,532	+2,808,297	+30.1	....	....
1900, ...	17	12,590,897	+438,365	+3.6	....	....
1901, ...	22	17,025,338	+4,434,441	+35.2	+12,387,527	+267.1
VALUE PER 100 POUNDS OF TIN AND TERNE PLATE.						
			Cts.		Cts.	
1896, ...	13	$3 23	....	....	....	....
1897, ...	15	2 88	—35	—10.9	....	....
1898, ...	18	3 01	+13	+4.5	....	....
1899, ...	21	3 51	+50	+16.6	....	....
1900, ...	17	4 14	+63	+17.9	....	....
1901, ...	22	4 00	—14	—3.4	+77	+23.9

TIN PLATE.

BLACK PLATE WORKS, 1901, AS COMPARED WITH 1896, 1897, 1898, 1899 AND 1900—Continued.

Years.	Number of establishments in operation.	Totals.	Increase (+) or decrease (—) as compared with preceding year.		Increase (+) or decrease (—) 1901 as compared with 1896.	
			Amounts.	Percentage.	Amounts.	Percentage.
VALUE PER TON OF 2,000 POUNDS OF BLACK PLATE NOT TINNED.						
1896,	13	$48 93	$	....	$	....
1897,	15	44 51	—4 42	—9.0	....	....
1898,	18	43 83	—68	—1.5	....	....
1899,	21	49 79	+5 96	+13.6	....	....
1900,	17	69 37	+19 58	+39.3	....	....
1901,	22	66 69	—2 68	—3.9	+17 76	+36.3
AVERAGE NUMBER OF DAYS IN OPERATION.						
1896,	13	250	....	....	....	....
1897,	15	281	+31	+12.4	....	....
1898,	18	278	—3	—1.0	....	....
1899,	21	223	—55	—19.8	....	....
1900,	17	199	—24	—10.1	....	....
1901,	22	228	+29	+14.6	—22	—8.8
AVERAGE NUMBER OF WORKING PEOPLE EMPLOYED.						
1896,	13	3,194	....	....	....	....
1897,	15	3,920	+726	+22.7	....	....
1898,	18	5,036	+1,116	+28.5	....	....
1899,	21	7,682	+2,646	+52.5	....	....
1900,	17	7,394	—288	—3.7	....	....
1901,	22	8,188	+794	+10.8	+4,994	+156.3
AGGREGATE AMOUNT OF WAGES PAID.						
1896,	13	$1,437,226	$	....	$	....
1897,	15	2,227,217	+789,991	+54.9	....	....
1898,	18	2,943,954	+716,737	+32.2	....	....
1899,	21	4,054,395	+1,110,441	+37.7	....	....
1900,	17	3,526,934	—527,461	—13.0	....	....
1901,	22	4,593,561	+1,066,627	+30.2	+3,156,335	+219.6

TIN PLATE.

BLACK PLATE WORKS, 1901, AS COMPARED WITH 1896, 1897, 1898, 1899 AND 1900—Continued.

Years.	Number of establishments in operation.	Totals.	Increase (+) or decrease (—) as compared with preceding year.		Increase (+) or decrease (—) 1901 as compared with 1896.	
			Amounts.	Percentage.	Amounts.	Percentage.
AVERAGE YEARLY EARNINGS.						
1896,	13	$456 55	$	....	$	....
1897,	15	568 17	+111 62	....	....	....
1898,	18	584 58	+16 41	....	....	....
1899,	21	527 78	—56 80	....	....	....
1900,	17	477 00	—50 78	....	....	....
1901,	22	561 01	+84 01	+17.6	+104 46	+22.9
AVERAGE DAILY WAGE.						
			Cts.		Cts.	
1896,	13	$1 80	....	....	....	....
1897,	15	2 02	+22	....	....	....
1898,	18	2 10	+08	....	....	....
1899,	21	2 36	+26	....	....	....
1900,	17	2 40	+04	....	....	....
1901,	23	2 46	+06	+2.5	+66	+36.7

PRODUCTION OF TIN PLATE, DIPPING WORKS, 1901.

(The dipping works buy all their black plate.)

Number of plants in operation,	5
Number of tinning sets,	45
Daily capacity in net tons,	200
Value of plants,	$610,503
Average number of days in operation,	283
Average number of working people employed,	372
Aggregate amount of wages paid to these working people,	$157,262
Total production, in pounds, tin and terne,	44,210,000
Total value of production,	$2,527,178
Average value per net ton,	$114 33
Average value per 100 pounds,	$5 72
Average earnings for the year,	$422 75
Average daily wage,	$1 49

COMBINED PRODUCTION OF TIN AND TERNE PLATE BY THE BLACK PLATE WORKS AND THE DIPPING WORKS, 1901.

Total production in pounds of tin and terne plate,	421,640,000
Total value,	$17,612,030
Average value per hundred pounds,	$4 18

COMBINED PRODUCTION OF TIN AND TERNE PLATE BY THE BLACK PLATE AND DIPPING WORKS, IN 1901, AS COMPARED WITH 1896, 1897, 1898, 1899 AND 1900.

Years.	Totals.	Increase (+) or decrease (—) as compared with preceding year.		Increase (+) or decrease (—) 1901 as compared with 1896.	
		Amounts.	Percentage.	Amounts.	Percentage.
TOTAL NUMBER OF POUNDS TIN AND TERNE PLATE.					
1896,	139,588,703	....	....	....	....
1897,	225,641,766	+86,053,063	+61.6	....	....
1898,	262,934,000	+37,292,234	+16.5	....	....
1899,	331,082,734	+68,148,734	+25.9	....	....
1900,	297,854,000	—33,228,734	—10.0	....	....
1901,	421,640,000	+123,786,000	+41.6	+282 051,297	+202.1
TOTAL VALUE.					
1896,	$5,045,097	$	....	$	....
1897,	6,997,041	+1,951,944	+38.7	....	....
1898,	8,445,097	+1,448,056	+20.7	....	....
1899,	12,165,879	+3,720,782	+44.1	....	....
1900,	13,044,487	+878,608	+7.2	....	....
1901,	17,612,030	+4,567,543	+35.0	+12,566,933	+249.1
AVERAGE VALUE PER HUNDRED POUNDS.					
		Cts.		Cts.	
1896,	$3 61	....	....	....	....
1897,	3 10	—51	—14.1	....	....
1898,	3 21	+11	+3.5	....	....
1899,	3 67	+46	+14.3	....	....
1900,	4.38	+71	+19.3	....	....
1901,	4 18	—20	—4.7	+57	+15.8

BLACK PLATE PRODUCTION BY COUNTIES, 1901.

PRODUCTION AND RELATIVE PER CENT. BY COUNTIES OF BLACK PLATE PRODUCED AT THE BLACK PLATE WORKS, PICKLED AND READY FOR TINNING.

Counties.	Net Tons.	Per cent.
Lawrence,	96,640	44.37
Westmoreland,	52,178	23.96
Allegheny,	24,307	11.16
Mercer,	15,195	6.97
Washington,	10,394	4.77
Fayette,	7,267	3.34
Dauphin,	6,400	2.94
Greene,	4,533	2.08
Montgomery,	900	0.41
Totals,	217,814	100

TIN AND TERNE PLATE BY COUNTIES (DIPPING WORKS).

RELATIVE PER CENT., BY COUNTIES, OF TIN AND TERNE PLATE PRODUCED 1901 BY THE DIPPING WORKS. (BUY THEIR TIN PLATE.)

Counties.	Net Tons.	Per cent.
Philadelphia,	15,693	71.00
Allegheny,	6,412	29.00
Totals,	22,105	100

PRODUCTION OF TIN AND TERN PLATE IN 1901 AT THE BLACK PLATE WORKS BY COUNTIES, AND RELATIVE PER CENT.

Counties.	Net Tons.	Per cent.
Lawrence,	91,299	48.38
Westmoreland,	48,646	25.78
Allegheny,	21,549	11.42
Washington,	9,025	4.78
Fayette,	6,968	3.69
Mercer,	6,714	3.56
Greene,	3,509	1.86
Dauphin,	1,005	0.53
Totals,	188,715	100

TOTAL TIN PLATE BY COUNTIES.

PRODUCTION AND RELATIVE PER CENT., BY COUNTIES, OF TIN AND TERNE PLATE PRODUCED BY THE BLACK PLATE WORKS AND DIPPING WORKS COMBINED, 1901.

Counties.	Net Tons.	Per cent.
Lawrence,	91,299	43.32
Westmoreland,	48,646	23.07
Allegheny,	27,961	13.26
Philadelphia,	15,693	7.44
Washington,	9,025	4.28
Fayette,	6,968	3.30
Mercer,	6,714	3.19
Greene,	3,509	1.66
Dauphin,	1,005	48
Totals,	210,820	100

THE MANUFACTURE OF CEMENT IN PENNSYLVANIA FOR 1901.

Number of firms having active plants in 1901,		14
Capital invested,		$19,271,981
Production:		
Portland (barrels),	6,873,203	
Natural (barrels),	851,866	
Improved (barrels),	230,600	
Total production in barrels,		7,955,669
Market or realized value,		$7,334,891
Aggregate of wages paid,		$2,212,457
Average number of workmen employed,		5,080
Average number of days in operation,		326
Average earnings for the year,		$435 52
Average daily wage,		$1 34

DIRECTORY OF THE ACTIVE CEMENT WORKS FOR 1901.

Firm.	Location.	Postoffice Address.
American Cement Co.,	Egypt, Lehigh county,	22 S. Fifteenth street, Philadelphia.
The Atlas Portland Cement Co.,	Coplay and Northampton, Lehigh and Northampton counties.	Northampton, Pa.
Bonneville Portland Cement Co.,	Seigfreid, Northampton county,	604 Fidelity Building, Philadelphia.
Coplay Cement Co.,	Coplay, Lehigh county,	Coplay, Pa.
Lehigh Portland Cement Co.,	Wampum, Lawrence county,	Second National Bank Building, Pittsburg.
Dexter Portland Cement Co.,	Nazareth, Northampton county,	Nazareth, Pa.
The Lawrence Cement Co., of Penna.	Seigfried, Northampton county,	Seigfried, Pa.
Lehigh Portland Cement Co.,	Ormrod and West Coplay, Lehigh county.	Allentown, Pa.
Martin's Creek Portland Cement Co.	Martin's Creek, Northampton county.	1523 Real Estate Trust Building, Philadelphia.
Nazareth Cement Co.,	Nazareth, Northampton county,	Nazareth, Pa.
Northampton Portland Cement Co.	Stockertown, Northampton county.	Stockertown, Pa.
Phoenix Cement Co.,	Nazareth, Northampton county,	Nazareth, Pa.
Reading Cement Co.,	Evansville, Columbia county,	Reading, Pa.
Whitehall Portland Cement Co.,	Cementon, Lehigh county,	Reading Terminal, Philadelphia.

THE TANNING INDUSTRY IN PENNSYLVANIA FOR 1901—LEATHER TANNED, CURRIED AND FINISHED.

Number of active plants in 1901,		200
Capital invested,		$64,582,517
Average number of days in operation,		299
Average number of wage earners,		15,565
Classified as follows:		
Males,	14,307	
Females,	545	
Children,	713	
Aggregate of wages paid wage earners,		$6,580,552
Apportioned as follows:		
Males,	$6,304,408	
Females,	141,224	
Children,	134,920	
Average yearly earnings:		
Males,	$440 65	
Females,	259 13	
Children,	189 23	
Average daily wage:		
Males,	$1 47	
Females,	.87	
Children,	.63	
Value of the production, not including by-products,		$69,202,533

Classified as follows:

432,442	sides grain leather, value,	$1,093,206
434,630	sides oak leather, value,	1,653,466
7,708,431	sides hemlock leather, value,	22,837,428
397,855	sides upper leather, value,	1,012,181
364,158	sides harness leather, value,	2,137,819
2,900,437	sides union leather, value,	12,220,732
1,267,902	sides split leather, value,	1,203,316
354,023	kip and calf skins, value,	685,553
195,300	patent and enameled leather, value,	519,249
28,492,260	goat skins, value,	25,090,390
778,773	sheep skins, value,	346,990
15,529	horse hides, value,	47,656
	Other skins,	354,547

THE MANUFACTURE OF BOOTS AND SHOES IN PENNSYLVANIA FOR 1901.

Number of factories in operation,		120
Capital invested in realty, buildings, machinery, tools, and in the conduct of the business,		$5,336,077
Average days in operation,		280
Average number of wage earners,		9,342
Classified as follows:		
Males,	5,438	
Females,	3,269	
Children,	635	
Aggregate of wages paid to wage earners,		$3,059,579
Apportioned as follows:		
Males,	$2,192,090	
Females,	789,270	
Children,	78,219	
Average yearly earnings:		
Males,	$403 11	
Females,	241 44	
Children,	123 18	
Average daily wage:		
Males,	$1 44	
Females,	.86	
Children,	.44	
Total production in pairs,		12,387,168
Classified as follows:		
Men's shoes, slippers, etc.,	1,459,657	
Women's shoes, slippers, etc.,	3,686,091	
Misses' shoes, slippers, etc.,	950,370	
Youths' and boys' shoes, etc.,	870,676	
Children's and infants',	5,170,332	
Not classified,	250,042	
Market or realized value of entire production,		$13,602,712

THE MANUFACTURE OF RUBBER BOOTS AND SHOES FOR 1901.

Number of factories in operation,		2
Capital invested in realty, buildings, machinery, tools, and in the conduct of the business,		$800,000
Average days of operation,		285
Average number of wage earners,		1,063
Classified as follows:		
Males,	621	
Females,	412	
Children,	30	
Aggregate of wages paid to wage earners,		$328,247
Apportioned as follows:		
Males,	$234,303	
Females,	90,784	
Children,	3,160	
Average yearly earnings:		
Males,	$377 30	
Females,	220 35	
Children,	105 33	
Average daily wage:		
Males,	$1 32	
Females,	.77	
Children,	.37	
Production in pairs,		2,658,730
Market or realized value of production,		$1,697,817

DIRECTORY OF PENNSYLVANIA'S BOOT AND SHOE MANUFACTURERS IN 1901.

PHILADELPHIA.

American Shoe Manufacturing Company, children's, misses', ladies', little gents', youths', and boys' shoes,	Front and Laurel streets.
Allen & Company, misses', children's and infants' shoes,	222 North Third street.
Brenninger, Henry G., boys' shoes,	1851 East Hutingdon street.
Brown, William, clogs,	2508 Frankford avenue.
Buek & Company, women's, misses', children's and infants' shoes,	125 North Fifth street.
Croxton, Wood & Company, ladies' shoes,	255 North Fourth street.
Driesbach, William, men's slippers,	347 North Fourth street.
Duling Shoe Company, ladies', misses' and children's shoes,	823 Filbert street.
Dunn, Michael J., children's shoes,	150 Green street.
Elkin, M. & Company, ladies' shoes,	417 Arch street.
Freedman, Charles & Company, ladies' boots and shoes,	125 North Seventh street.
Gibbon, Charles S., ladies' shoes,	54 North Fourth street.
Hagel Brothers, infants' shoes,	347 North Fourth street.
Hallahan & Sons, women's shoes,	236 South Ninth street.
Halliwell, Charles H., clogs,	2539 North Front street.
Keystone Shoe Company, infants' and children's turn shoes,	307 Race street.
Laird, Schober & Company, ladies', misses', children's and infants' boots and shoes,	19th and Buttonwood streets.
Lenox Shoe Company, misses' and children's shoes,	1336 Germantown avenue.
Mailbach, Jacob, ladies', misses' and children's shoes,	149 North Fourth street.
Marke & Company, ladies' shoes,	333 North Fourth street.
Mayer, Alfred, Company, women's shoes and oxfords,	304 Race street.
Medlar & Holmes Company, ladies' boots and oxfords,	514 Ludlow street.
Mundell, John & Company, army, children's and infants' shoes (since, out of business),	13th and Cherry streets.
Munden, George, infants' shoes,	326 York avenue.
McBrearty, John, men's and boys' boots and shoes,	Broad and Hamilton streets.
Nahm Brothers, ladies', misses' and children's shoes,	185 Berks street.
Newman, A., & Company, ladies' comfort shoes and turns of every description,	328 Noble street.

Newton, J. R., & Company, ladies' shoes,	507 Arch street.
O'Brien & Company, ladies' shoes,	218 Dock street.
Passant & Olley, ladies' shoes,	139 North Sixth street.
Phillips, Milton, ladies' shoes,	410 Arch street.
Quaker City Shoe Company, men's and boys' shoes,	313 Race street.
Roller Brothers & Company, infants' and children's shoes, turns and men's patent leather burial slippers,	230 New street.
Smaltz, Goodwin Company, ladies', misses' and children's shoes,	11th and Race streets.
Smith, M. A., & Son, men's and women's sporting shoes,	25 N. 13th street.
Taylor, H., & Company, men's fine shoes,	413 Arch street.
Twohig & Adams, men's boots and shoes,	307 Cherry street.
Wise, L. M. infants' shoes,	115 North Fifth street.
Ziegler Brothers, ladies', misses' and children's shoes,	117 North Fifth street.

MANUFACTURERS OUTSIDE OF PHILADELPHIA, BY COUNTIES.

ADAMS.

Deckert & Stough, infants' turn shoes,	New Oxford.
Emmert, W. H., children's shoes,	New Oxford.
Livingston, E. C., infants' and children's shoes,	New Oxford.

BERKS.

Birdsboro Shoe Manufacturing Company, children's shoes,	Birdsboro.
Huyett, Elmer R., Infants' turn shoes,	Birdsboro.
Huyett & Rhoads, infants' shoes,	Birdsboro.
Wills & Lukens, infants' turn shoes,	Birdsboro.
Curtis, Jones & Company, infants' and children's shoes,	Hamburg.
Keystone Shoe Company, ladies', misses', children's and infants' shoes,	Kutztown.
Saucony Shoe Company, children's shoes,	Kutztown.
Curtis, Jones & Company, infants' and children's shoes,	Reading.
P. & F. Manufacturing Company, infants' and children's turns,	Reading.

BLAIR.

Tyrone Shoe Manufacturing Company, men's welt and heavy shoes,	Tyrone.

BRADFORD.

Tracy, Charles L., men's and boys' shoes,	Towanda.
Troy Shoe Company, infants' and children's turn shoes,	Troy.

BUCKS.

Glenwood Shoe Company, mining and furnace shoes,	Ferndale.
Shick, William, miners' shoes,	Ferndale.
Horn, D. L., men's hand pegged and hand sewed boots,	Hagersville.
Bean, A. J., miners' shoes,	Ottsville.
Scheid, H. B., boots and shoes,	Richland Center.
Freed Brothers, men's, boys, youths' and little gents' shoes; ladies', misses and children's shoes; men's and boys' boots,	Richlandtown.
Bean, T. T., boots and shoes,	Riegelsville.

COLUMBIA.

The W. F. Carmer Shoe Company, women's misses', children's and infants' shoes,	Catawissa.

CUMBERLAND.

Bedford Shoe Company, children's shoes,	Carlisle.
Carlisle Shoe Company, women's, misses' and children's welts, turns and McKays,	Carlisle.
The Lindner Shoe Company, ladies', misses' and children's shoes,	Carlisle.

DAUPHIN.

Halifax Shoe Company, ladies', misses' and children's shoes,	Halifax.
Prenzel, A. H., & Company, infants' and children's turn shoes,	Halifax.
The Bay Shoe Company, women's, misses' and children's shoes,	716 State street, Harrisburg.
Harrisburg Boot and Shoe Manufacturing Company, Limited, women's, misses' and children's shoes,	1404 Vernon st., Harrisburg.
The E. H. Waters Company, infants' shoes and moccasins,	Basin and Wyeth Aves, Hbg.
Hummelstown Shoe Company, women's, misses' and children's shoes,	Hummelstown.
Johnson Baillie Shoe Company, ladies', misses' and children's shoes,	Millersburg.

FRANKLIN.

Chambersburg Shoe Manufacturing Company, women's, misses' and children's shoes,	Chambersburg.

JUNIATA

Ramsey, The Joseph P., Company, women's Mc Kay sewed shoes (since, out of business), ... Patterson.

LANCASTER.

Miller, Hess and Company, Limited, misses' and children's shoes, ... Akron.

The Kreider Shoe Manufacturing Company, boys', youths' and little gents' McKay sewed shoes, ... Elizabethtown.

Wensbach, J. A., children's and misses' springs, Rowenna.

LACKAWANNA.

Olyphant Shoe Company, men's, boys' and youths' shoes (since discontinued), ... Olyphant.

LEBANON.

Kreider, A. S., & Company, ladies', misses' and children's McKay sewed and Goodyear welt shoes, ... Annville.

Miller Shoe Company, boys' shoes (since, out of business), ... Jonestown.

North Lebanon Shoe Company, men's and boys' working shoes, ... Lebanon.

Kreider's W. L., Sons, infants' shoes, turns, soft soles and moccasins, ... Palmyra.

Landis, J., & Sons, ladies', misses', children's, boys', youths' and little gents' shoes, ... Palmyra.

LEHIGH.

The Allentown Shoe Manufacturing Company, little gents', youths' and boys' shoes, ... Allentown.

The American Shoe Manufacturing Company, men's, women's, misses' and children's shoes, Allentown.

Fritz, Walter S., men's, women's, misses', children's calf and miners' brogans, ... Allentown.

Honest Shoe Manufacturing Company, men's, boys', youths', little gents', women's, misses' and children's shoes, ... Allentown.

Leh, H., & Company men's, women's, misses' and children's shoes, ... Allentown.

Lehigh Valley Shoe Company, boys', youths' and gents' Goodyear and McKay shoes, ... Allentown.

Roney & Berger, misses', children's and infants' shoes, ... Allentown.

Schneider, Philip, ladies', misses' and boys' shoes, Allentown.

West End Shoe Manufacturing Company, women's shoes (since, discontinued), ... Allentown.

Wolfe Shoe Manufacturing Company, women's and little gents' shoes,	Allentown.
The Alburtis Shoe Manufacturing Company, ladies', misses' and children's shoes,	Alburtis.
Stoneback, C. H., men's, boys', youths', women's, misses' and children's heavy shoes,	Coopersburg.
Hartman, James K., miners' boots and shoes,	Lynnport.
Century Shoe Company, Limited, children's turn shoes,	Macungie.

LUZERNE.

Dooley & Weis, miners' boots and brogans,	Ashley.

LYCOMING.

The Walsh-Decker Shoe Company, boys', youths' and little gents' shoes,	Montgomery.
Dayton, J. E., Company, shoes,	Williamsport.

MONTGOMERY.

Stetler, Howard W., brogans, bal. shoes and heavy boots,	Pennsburg.

NORTHAMPTON.

Easton Boot and Shoe Company, men's, boys' and youths' medium grade shoes,	Easton.

NORTHUMBERLAND.

Hollister, W. G., miners' and ironworkers' brogans,	Mt. Carmel.
Watsontown Boot and Shoe Company, men's, boys' and youths' shoes,	Watsontown.

SCHULYKILL.

Adams Shoe Company, Limited, children's and misses' shoes,	Adamsdale.
Albright, H. S., & Company, children's shoes, Goodyear and McKay sewed,	Landingville.
Albright, H. S., & Company, children's shoes, Goodyear and McKay sewed,	Orwigsburg.
Brown, A. E., & Company, men's, children's and infants' shoes,	Orwigsburg.
Miller, A. M., & Company, misses', children's and infants' shoes,	Orwigsburg.

Kepner, Scott & Company, ladies', misses', children's and infants' shoes, ...	Orwigsburg.
The Rehr Shoe Company, infants' turn shoes, .	Orwigsburg.
Reliable Shoe Company, ladies', children's and infants' shoes and soft soles, turns,—McKay sewed, ...	Orwigsburg.
Zulick, J. S., & Company, misses', children's and infants' shoes and slippers, ...	Orwigsburg.
Dengler, John B., turns and soft sole shoes, ...	Pottsville.
Gerber, G. H., misses', children's and infants' turn shoes, ...	Schuylkill Haven.

SNYDER.

Eisenhuth, T. H., & Company, ladies', misses' and children's McKay sewed shoes, ...	Selins Grove.

WAYNE.

Durland Thompson Shoe Company, men's boys', youths', women's, misses' and children's shoes,	Honesdale.
Honesdale Shoe Company, Incorporated, women's, misses' and children's McKays and welts, ...	Honesdale.

YORK.

Sheppard & Myers Company, men's fine shoes,	Hanover.
The Charles Heiser Shoe Manufacturing Company, men's fine Goodyear welt shoes, ...	York.

RUBBER BOOTS AND SHOES.

LYCOMING.

Lycoming Rubber Company, ...	Williamsport.

PHILADELPHIA.

Watkinson, George & Company, ...	36th and Reed streets.

The following new boot and shoe factories are reported active for 1892.

Bailey Shoe Manufacturing Company, ...	Williamsport.
Sunshine Shoe Manufacturing Company, ...	Allentown.
H. M. Zulick & Company, ...	Schuylkill Haven.

AVERAGE DAILY WAGE.

Deductions from the foregoing presentations, and means the average for skilled and unskilled, men, women and children.

Tool steel,	$2 68
Steel billets, slabs and blooms,	2 65
Tin plate (black plate works),	2 46
Steam pumps,	2 30
Stoves, heaters, ranges, etc.,	2 22
Rolled iron and steel,	2 11
Scales,	2 09
Bicycles,	2 08
Locomotives and stationary engines,	2 06
Saws,	2 03
Locomotives and cars built and repaired,	2 02
Iron and steel forgings,	1 90
Electrical supplies,	1 90
Book binding,	1 90
Engines and boilers,	1 86
Iron and steel bridges,	1 83
Wrenches, picks, etc,	1 83
Pig iron,	1 82
Machinery,	1 80
Foundries and machine shops,	1 80
Wagon and carriages, axles and springs,	1 79
Wrought iron pipes and tubes,	1 77
Car springs, axles and railway supplies,	1 77
Window glass, bottles and table goods,	1 76
Iron vessels and engines,	1 73
Shovels, spades, scoops,	1 73
Malleable iron,	1 72
Building and structural iron work,	1 72
Iron chains,	1 71
Agricultural implements,	1 70
Boilers, tanks, stacks, etc.,	1 66
Steel castings,	1 65
Building brick,	1 63
Paving bricks,	1 60
Pottery,	1 60
Iron specialties,	1 59
Brass, copper and bronze goods,	1 58
Metal and metallic goods,	1 58
Fur and felt hats,	1 55

Slate roofing (square),	1 54
Iron fences and railings,	1 54
Edge tools,	1 52
Cast iron pipe,	1 52
Wire nails, rivets, etc.,	1 50
Bath boilers, tanks, etc,	1 50
Tin plate (dipping works),	1 50
Safes and vault doors,	1 50
Carpets,	1 50
Slate roofing (tonnage),	1 49
Pianos and organs,	1 48
Wall paper,	1 48
Glazed and chrome kid,	1 48
Tanneries, males,	1 47
Hardware specialties,	1 46
Plumber supplies,	1 46
Paper manufacture,	1 46
Upholstery goods,	1 44
Fire brick,	1 44
Wire rope,	1 40
Wire,	1 37
Tinware,	1 36
Cement,	1 34
Carpet yarns,	1 33
Rugs, yarns, etc.,	1 32
Chenille goods,	1 31
Files,	1 29
Woolen and worsted cassimers,	1 27
Cotton and woolen cloths,	1 26
Tacks and small nails,	1 25
Wool hats,	1 24
Hats and caps,	1 23
Bolts and nuts,	1 19
Woolen and worsted fabrics,	1 19
Woolen and worsted yarns,	1 19
Cotton goods,	1 17
Cordage, rope and twine,	1 14
Silk ribbons,	1 14
Woolen blankets, flannels, etc.,	1 13
Cotton yarns,	1 12
Shirts and shirt waists,	1 07
Suspenders,	1 04
Cigars,	1 03
Neckwear,	1 03
Wire goods,	1 02

Lace goods,	1 02
Dress trimmings, braids, etc.,	1 01
Woolen, worsted and cotton yarns,	99
Hosiery,	96
Paper, paper boxes and envelopes,	93
Knit goods, underwear,	91
Umbrellas and parasols,	90
Silk, broad goods, thrown silk, yarns, etc,	84
Silk, broad goods and ribbons,	75

COMMUNICATIONS.

The following letters are in reply to the inquiry of the Bureau as quoted in the introduction of this Report. The inquiry was as to the adoption of any successful plan of strike prevention, or information as to any method that may have proved successful in bringing about a better understanding between the employed and the employer.

IRON AND STEEL.

Dear Sir: In answer to your inquiry of the 24th inst. in regard to the labor question, I beg to say that we have not put into practice any new plan with the view of bringing about a better understanding between employer and employes.

I have always regarded the personal equasion as of greater importance in adjusting grievances and preventing or settling strikes than any modern patent method that may be devised. In other words, the management of this company endeavors to treat all its employes with entire frankness and absolute fairness, and with due consideration of the merits or demerits of each individual case. A record established on this basis enables us to feel that we can rely in most cases on the good judgment and sense of fairness of our intelligent workmen. Mutual confidence follows, as a matter of course. And if misunderstandings arise, or dissatisfaction exists from any cause on the part of our workmen, they know from past experience that the path to the general office is always open to every one from the highest to the lowest in the service, and their complaints will be promptly heard and adjusted.

And on this basis we have got along so far very well.

Dear Sir: In response to yours of December 24, 1901, our rules are: 1—Always to give two weeks notice (with the works in operation) of any advance or reduction of wages, and to demand the same. 2—

Always patiently hear any claims of mistakes in pay or other grievances and to conscientiously try to administer strict justice.

A strict adherance to such rules generally obviates trouble, but in times of great excitment, when men's passions are inflammed by outside causes, nothing will do any good but time and idleness. The innocent often have to suffer for the guilty and the just for the oppressions of others.

Dear Sir: Replying to your circular letter of the 24th we have had no strike at our mill since 1895, and have had no grievances to settle, consequently we have not found it necessary to adopt any plan to bring about a better understanding, etc. We are hopeful that the new committee appointed by the civic federation, etc., at a late conference in New York will be found effective as a means of arbitrating or settling difficulties when they arise.

Dear Sir: We very carefully note contents of your valued favor of 24th inst. Referring to that part of your letter in which you wish to know if we have put into practice any plan that has proved successful in bringing about a better understanding in adjusting grievances or in preventing or settling strikes and that you would like us to state what course we have pursued, beg to say we have successfully avoided all strikes and have pleasantly settled all differences which have arisen by endeavoring in all cases to treat our employes, as nearly as possible, as we would like to be treated if similarly placed.

When prices permit an advance in wages, we make the advance before our men demand it, and when prices decline, we have them appoint a committee to meet us and we then discuss freely the condition of the market, giving them data and showing them why we are compelled to ask them to work for lower wages. Of course, we have some hot heads among them who would be only too glad at all times to raise a rumpus but a very large majority of our men are reasonable and they rule the small minority.

We believe that it is a great deal easier and better to prevent a strike than to settle a strike. Trusting we have answered your question satisfactorily, we beg to remain.

TIN PLATE.

Dear Sir: In answer to your inquiry on the subject of the management of labor, we would say that we have had no trouble with our employes in recent years for the reason that we endeavor to treat our men fairly, and employers and employes thus meeting in a spirit of fairmindedness, grievances of whatever description are readily adjusted to the satisfaction of all concerned.

Dear Sir: In reply to your circular letter of December 24th, we respectfully state that the employees in all our departments, except pattern shop are union men. In pattern shop, part union and part non-union. In our foundry, the National Founders' Association, of of which we are members, and the Iron Moulders' Union of North America, have arbitrated all differences in the Philadelphia district, and we are pleased to report no troubles whatever. With our fitters and finishers, blacksmiths and helpers and erectors, we had considerable trouble during the year just closed, arising from the fact that we were desirous of employing either union or non-union men, having regard solely to the capability of the individual workman. After a struggle of several months, we were forced to unionize our fitting and smith shops and to give ten hours pay for nine hours work in shop and ten hours pay for eight hours work outside of shop. This has proven a serious loss to us since we are brought in competition with firms in surrounding towns, where the men have longer hours and less per diem pay. In Philadelphia, the Allied Building Trades' workmen declined to work with any non-union man no matter what his trade. After a series of strikes, this resulted in forcing many of our men into the unions, when they preferred to be non-union and eventually in the unionizing of our shops. Our judgment, as employers is very clear. No man should be questioned whether he is union or non-union, but should be hired simply on the ground of his capability. The attitude of the unions is undemocratic and subversive of the individual rights of the workingman. In its practical outworking it inures to the advantage of the incapable workman, obliging his employer to pay him a wage, he does not deserve, solely because he is a union man. If the prices fixed by the union in the several building trades are forced to a higher figure, it will eventually result in diminished investments in building operations.

FOUNDRIES.

Dear Sir: Your circular letter of the 24th inst., relative to conciliation as a strike preventive, has been received.

The management of this Company has been carrying out the following plan:

Full pay is given all employes for National holidays, such as July 4th, Thanksgiving Day and Christmas, who report in good condition for duty and work the succeeding day.

On general election days they are paid for the whole day, but given half of it to enable them to dress up and go to the polls.

On other election days they are given several hours for the same purpose.

Once a year they are given excursion tickets for a picnic to some place within reasonable distance, and costing the Company in and about $2.00 for each ticket.

Any employee injured in the works is placed under the care of a surgeon employed and paid by the Company, and the employee is kept on the pay roll at half pay until he can return to work.

In hot weather ice water is supplied by the Company. Improveprovements in machinery and appliances to lighten the labor are resorted to and the employees receive decent treatment.

A club room is being fitted up for them where they can meet and play innocent games or read magazines furnished by the Company.

This course has increased the sobriety and self-respect of the employees as well as the quantity and quality of the work done by them and produced good feeling and respect for the management.

Dear Sir: In reply to your inquiry in reference to labor troubles we make the following remarks. They may not be quite what you are asking for, but we give it to you as our views.

We consider unions the greatest cause of strikes and the producers of the largest amount of labor troubles. (Witness the strikes for a principle wherein neither wages nor hours enter.) Also, so called "Sympathetic strikes" where a lot of men without a grievance paralyze business and demoralize trade because others are striking.

Unions never know when men have secured reasonable demands. As an illustration, in a lecture delivered by a president of one of the Unions a few nights ago (at which the writer was present) he said "they were striking for shorter hours. They were first trying to get eight hours for a days work; when that was accomplished they would fight for seven hours. Hence we ask, what will they not strike for?"

We never had a strike in our works, and don't know whether we have any union men or not. We pay our men fair wages and demand a good days work; give as a rule, steady employment, and provide for their comfort at our works, and look after them when sick or injured.

We believe in the piece work system whereby a competent man can earn what he is worth and a poor workmen the same thing by his worth.

We submit, it is the Heaven Born right of every man to labor: To-wit: No boy should be prevented from learning a trade, which unions do endeavor to prevent, neither should a man be intimidated, beaten or killed because he is satisfied to work when another man refuses to work.

MACHINERY.

Gentlemen: In regard to the question raised in yours of the 24th as to our plan, if we have one, for the prevention of strikes, beg to say we have no plan other than to treat our men as well as we know how, and if they have disagreements of any kind to get together and adjust same, before it is time to cause any ill feeling on the part of either parties and in this connection beg to say we have been especially free from strikes or trouble with our help for a great number of years past.

Dear Sir: I have before me your circular letter of December 24th.

There are many difficult phases to be carefully considered in each case where a strike is brought about.

Our shop is of moderate size, most of the employes skilled machinists, and therefore intelligent.

In our particular case, while the papers had it that our men were out on a strike, the men, with exception of fifteen, said that they did not have any grievance, but if the "union" (one-half dozen only of our men being members) declared a strike, they should not work, nor seek work elsewhere, but quietly take a vacation until settlement was made, being in fear of personal violence and being called scabs by the strikers.

We asked our men to be represented by one of the workmen, who had our mutual confidence, and we readily made a satisfactory agreement by which we close our shop at 1 P. M. Saturdays, instead of 4.30, with three-fourths hour regular noon-time.

This gives the men an opportunity to get home to dinner, get dressed and have an outing with their family.

We could not afford to give the men ten hours pay for nine hours work—Profits would not allow it. We concede them two and one-half hours each week, making fifty-seven and one-half instead of sixty hours.

As a result of the strike, fifteen men remained out, and we pay by the hour, instead of by the week.

I do not think that the men endeavor to produce any more work per day than before, which was one of the claims put forward by the union. To my mind, the so-called unions need to be governed by a better educated class of men than at present—leaders who are broad-minded and not self-seeking. Until then, the skilled workman is better off out of a union.

I favor examination as early as possible, where dissatisfaction is found to exist, and arbitration by fair-minded representatives if possible. There are two sides to every dispute.

Dear Sir: Regarding strikes we beg to say that we think the only way to avert them is to pass some laws that will make punishable for labor agitators, who make a living out of their agitation, to disturb labor conditions in any factory in the State or Nation. They are only nuisances, not only to the manufacturers, but also to the hands.

We had a strike last summer—some men concluded that, because other shops were having strikes, there should be one here also, and a delegation of our highest priced men waited on me one day, and asked what I was going to do? About what? I said. About giving us a nine hour day. I said, I am perfectly willing to grant you a nine hour day, because to tell the truth I do not believe the average man can give his employer a fair amount of work during ten and three-fourth hours. (This is the length of the usual day here, because we give the men Saturday afternoon, and the only way to do it is to make up the sixty hours during the other days.) They said—Well what about pay? I said they would get just as many hours' pay as they did hours' work. No. they wanted to get ten hours' pay for nine hours' work. Well, I said, you cannot get it here, and if you are not satisfied you better go where you can do better. They then said —Well, we guess we can shut up your shop—I said I had been running this shop for 25 years without trouble, and I thought I might continue to run it, and they departed. One hour afterwards, I passed through the shop, and found nearly all the men packing up their tools, and in a few minutes all had taken their departure, except the engineer, the foreman and about two other men. For two or three days they hung around the premises, and in one case tried to interfere with the men coming to work; but this soon became burdensome to them, as they were not making a living, and most of them had families to support. In a week we were running again about as usual with a new set of men, and not one of those old hands will ever have the chance to work here again. We have not seen them since, but we have heard that some of them are pretty badly off. Now, there was not the slightest reason for this strike, and we do not think most of them wanted to go out, but they were overinfluenced by the leaders, and they have had to suffer for it.

As we understand the situation, we believe, if a man puts his money into a plant, and pays as high wages as he can afford to pay, and manages to sell his product for enough to make a very small profit, he runs all the risks, and hires his men for whatever wages he can pay. If they are not satisfied, and think they can get more elsewhere, he has no hold over them, and they are free to go wherever they please. This is certainly the case in all other walks of life.

I am not against the men trying to get higher wages. I believe that that is the way to raise the standard, but all men are not worth the same. Where one man is worth $3.00 another is not worth $1.50, and there is no reason or justice in his expecting to get the higher figure. As a rule the strikes are not organized by the men who get the highest wages, but the lowest; the men who have brains enough to get high wages usually have sense enough to keep the place that gives them those high wages, and he is not fool enough to enter any action that will deprive him of the opportunity to work for those wages.

Of course the great trouble comes when one employs great masses of men, and they are not individuals, but so many parts of a great machine, and they have to be treated in a mass. Not having been in that position we do not feel that we are competent to make recommendations.

When the men get more education, and have some ambition to save their money for the benefit of their families, and treat those families as if they were really their own, the case will be better.

But as long as the State allows a parent to put his children into some reformatory institution simply because he is too lazy or shiftless to support him, that man will be ready to strike, or to commit any other breach of the peace. The State at present allows a man to shift his family responsibilities onto some one else too easily, and there is no home feeling. The home feeling must be encouraged by all means in the power of the people, and everything possible must be done to preserve the family life in the country.

I did not start out with the idea of making a lecture, but perhaps you will wade through this, and I trust may get an idea.

Dear Sir: We are in receipt of yours in regard to the labor question.

For some years we treated with our men through "shop committees," and were always in trouble. Fourteen years since we abandoned that practice, and since then have dealt with our men individually. They have prospered and seem entirely satisfied. The general objection to a shop committee we have found to be due to the fact that the members of it too frequently seem to feel that they are appointed by their fellow workmen for the special purpose of regulating the business of the company and to keep matters generally in a state of agitation, and that otherwise they would be held to be unenterprising.

HARDWARE AND CASTINGS.

Gentlemen: With reference to the matter of your favor of 24th December last that is, strikes and remedies for them, we remark that these works are conducted on a plan by which the employes so far as they decide to do so are owners of stock, that is, entitled to subscribe for stock, and therefore receive whatever dividends accrue, besides their wages. The percentage who have done this is comparatively small, say one in one hundred, even this small number seems to have the effect to establish a sentiment against any labor agitation, at least we are not troubled in that way to any serious extent.

Dear Sir: In reply to your circular letter of December 24th in reference to the labor question, would say: We have two (2) plants. In one we gave a number of good workmen the earning capacity of

$1,000 worth of stock of that company, with the understanding that they would leave from their wages an amount equal to the earning capacity of $1,000, and in a few years they would own that $1,000 worth of stock by purchase, and they did own it in the time specified, and have bought considerable more since then.

We find that plan worked satisfactorily, giving no more than the usual friction of stockholders, but it also demonstrated to the men in question that we treated them fairly, and did not eat up all the profits by large salaries, as the president of the company only received $1,000 a year salary, and gave his services for a number of years gratis, in order to establish the business on a solid basis, which we have succeeded in doing, as everything is working in harmony, and we trust will continue to do so.

BOILER WORKS.

Dear Sir: Replying to your favor of the 24th inst., requesting information concerning any plan which we have put into practice for the purpose of improving the conditions existing between ourselves and our employes, would say that, owing to the unsettled condition of labor, we have only endeavored to come into closer contact with our people than in the past.

We have no special plan, simply a general policy to have our men come to us and tell us frankly and plainly anything they have to say, and we endeavor to meet them on a fair and equitable basis.

We are members of the National Founders' Association of the United States, which organization has been, we believe, of very great benefit in adjusting differences between labor and capital in the foundry interests.

During the agitation this year among machinists for a nine hour working day, many of our older hands were persuaded, even against their will, to join in with such of our men as belonged to labor unions in asking for the nine hours. We talked the matter over plainly with them, giving them to understand that what we wanted was a certain amount of work during each day, and if they could turn out as much in the nine hours as they had been in the ten we would be very glad to grant their request, they assured us that this could and would be done, and it gives us pleasure to say that they have lived up to this promise.

We are interested and pleased to see the constantly increasing attention being paid to the adjustment of differences between labor and capital, and are gratified in the belief that a great improvement is being made on these lines.

STOVES.

Dear Sir: We beg to hand you herewith statement as near as we can give it to you for 1901.

We have had no necessity to meet strike conditions during the past year. The President of our company, inaugurated a co-operative plan for last year. The idea was that money actually earned by an employee became his capital, or investment, in our company, and whatever the dividend earning power of the company was, he received a like percentage on the amount of his actual earnings. The way we figured was to get our net profits, deduct the regular discount of two per cent. on the capital stock, and this would leave a net amount for distribution among the stockholders, they receiving their dividend on cash invested, and the employee receiving a dividend on the wages that he had actually earned in the year. The Company was not pledged to continue this arrangement, which was entirely voluntary, but do, however, expect to continue it this year.

AGRICULTURAL.

Dear Sir: Your favor of the 24th received. Yes, the labor question is a vital one; it is agitating the public mind throughout the world.

The writer has been in business over forty-five years, commenced by learning the trade himself, which gave him a better knowledge of the workman's attitude of mind than he could have obtained by any other means. President Schwab's wonderful success in managing labor comes largely from the fact that he was once a laborer himself and worked with them. He knows that a business cannot be successfully and continuously conducted unless the managers have absolute control, and this absolute control is quite as essential to the well-being of labor as it is to capital, and the day I could not control the business that I conduct without interference from irresponsible people from a distance who are not even acquainted with me or my business, I would close for all time.

Labor and capital are partners; antagonism is therefore as abusrd as it is injurious, and the reduction and absurdum argument might be applied to strikes. As with other partnerships, each member of the firm must have his distinct department, and where one interferes with the other the best results do not follow.

As for plans for bringing about a better understanding would say that they were formulated about 1,870 years ago, in Christ's sermon on the mount. Simply treat your workmen as you would have them treat you under similar circumstances. In proportion as you do that and they become convinced that you are sincere, misunderstandings and grievances will vanish, and just in that proportion. There is no other safe rule. As I firmly believe that outside interference in the management of my busines is as much against the interest of my workmen as my own, and since if we were in their place and they in ours I would feel about it the same way, we permit none. If there should be union men in the factory and they are ordered to strike, we only feel sorry for them—we treat them fairly and know they will not better themselves—are ready to give them testimonials to get work elsewhere and have them depart in peace, but would close the business forever before attempting a compromise which in the nature of things is impracticable. If all manufacturers would adopt this plan of course strikes would be at an end. We cannot recognize their right to interference in the management of our business, since they know nothing about it, and it would only make a mess of things and hurt them as much as it would us.

The labor question has never disturbed us particularly, since we have an abiding faith in the general underlying good sense of the American people, and feel quite sure in the long run that workmen and capitalists alike will recognize that they are in partnership, and therefore their interests are mutual, and that any antagonism is a breach both of good faith and good policy.

In conclusion would say, I most heartily and cordially endorse the New York convention and its plans. With such a personnel, good must come of it.

TOOL WORKS.

Dear Sir: Replying to your circular letter of the 24th inst., we beg to state that we have no particular plan for strike prevention in our establishment.

We always aim to treat our workmen as intelligent men and look after their comfort and interests. In our twenty-eight years of existence we have never had a strike nor any intimation of one. The majority of our men have been with us all of these years.

The secret, if there be any, is in the treatment of workmen as men of intelligence.

SMELTING WORKS.

Dear Sir: We are in receipt of your favor of the 24th inst, relative to our plan of strike prevention with our employes. In reply would say although we have been in business successfully over thirty years, we have never had a strike or any trouble whatever with our employees as an organized body. We employ from fifty to seventy-five men; we pay them the current rate of wages, and they seem perfectly satisfied.

ELECTRICAL.

Dear Sir: Replying to your favor of the 24th, would say that the labor question is not one that has ever concerned us very seriously, in eighteen years we have never had a strike or any disagreement of any kind with our men. Our system has been to treat our men with fairness and pay as high wages as we consistently could. Where economy was necessary it has been our method to put more work and responsibility on our men at advanced wages rather than lower the scale of wages.

We are not able to make any suggestions as to the matter of conciliation beyond fair treatment of employees.

PRESSED AND FLINT GLASS.

Dear Sir: Your circular letter in reference to the labor question came duly to hand, and we enclose you with this, a wage and move list, with rules and regulations of the Pressed Ware Department, adopted by a joint committee of the National Association Pressed and Blown Glasswares and the American Flint Glass Workers Union. These rules were adopted in 1888 after a prolonged strike that lasted very nearly six months. The question as issue then between the manufacturers was the right to employ workmen who were not members of their union, and the unlimited production of glassware to be paid for piece work. This set of rules was the result of a prolonged struggle and was, in a measure, a compromise.

Since then there has been but a few strikes amongst this branch of the trade, which covers some ten branches or lists, including the making of chimneys, white liners for fruit jars, fruit jars, engraving, glass made in tanks, what is known as the Caster place list, which is a list covering a large variety of blown glass such as jars, fish globes, acquariums, and such line of goods, articles made in paste mould, shades and globes, articles made in iron mould, and pressed ware list which we send you. The numbers have varied some little since the original list, but the changes have invariably been to the benefit of the workers.

The exception to this was one strike, which took place in 1893, which was a serious one, and grew out of the fact that the workers refused to let non-union men work in the factories, and also refused to make more than a limited quantity of goods. The United States Glass Company of Pittsburgh issued a set of rules which they asked the workmen to agree to, which made the factories open factories in which any man could work whether he was a member of the union or not, and also provided that all work should be made piece work, and should work eight and one-half hours for a day's work, and make what they could during that time. This strike resulted in the defeat of the workers. The United States Glass Company after a long struggle, being able to operate their plants on the lines they proposed. With this exception the rules have been fairly well lived up to, but there have been short strikes owing to hot blood on both sides, but the manufacturers claim, and the workers too, that under Rule 10 there shall be no strike until the matter has been referred to the manufacturers' and workers' committee for settlement. This has worked to a very great advantage, and is insisted upon at the present time.

The great danger is from the unreasonable position taken by the workers at times in which they will not yield points which they know are absolutely right: For instance, some of these lists that are made could be made in one-half of the set time, and yet they are not willing to rectify them. The manufacturers' committee have time and again offered to yield on some points, provided they would yield on those unequal things, but it is impossible to get any concession from them that does not give them twice as much another way.

Labor organizations are all right, provided they are worked intelligently and do not interfere with the personal liberty of men not members of their organization.

CUT GLASS.

Dear Sir: In reply to your question as to our method of handling labor difficulty we would say that it has been our policy to use our men just and fairly and pay them as well as business conditions will allow us, and any who are not satisfied with that treatment must look elsewhere for employment. In the case of the strike a year ago we fought it to a finish, the men coming back to work on our terms.

CIGARS.

Dear Sir: Yours of the 24th inst. is received and in reply would say, that as we have always enjoyed the pleasantest relation with our employees, it has not been necessary for us to look into or plan any means of preventing a strike. We attribute this condition to the fact that we have always paid them good wages and given them considerate treatment, recognizing the fact that they are human and entitled to treatment as such by their employers.

Trusting this answers your inquiry satisfactorily, we are

CONTRACTORS.

Dear Sir: In reference to your inquiry whether I had put in practice any plan for adjusting grievances or preventing or settling strikes. I have had a little experience along that line. Several years ago the Bricklayers International Union of this city made certain demands upon the contractors. There were committees appointed from both sides. (I was on committee of contractors), and after several meetings, we were unsuccessful in coming to an agreement, and finally agreed to leave the matter to an arbitrator for settlement, he to be chosen by both sides and to be neither an employer or employee. The difficulty was satisfactorily settled in this way, both sides had to concede some points. A contract was signed and the best of feeling prevailed on both sides.

In the fall of 1900, just after the great miners strike the men employed at my brick works thought they should receive a raise in their wages. There was no demand made, but some of them were agitating the matter and making the others dissatisfied so that there was considerable muttering and grumbling among them.

After thinking the matter over I invited them all to spend the evening with me at my house. I then explained to them that I had heard that some of them were dissatisfied with their pay, and that I was getting no more for my brick than I had been before, in fact had taken a contract quite low for the sake of keeping my plant running all winter, and could not afford to pay much more wages. I felt friendly to all of them as many of them had worked for me a long time. I did not want them to strike, as that might make hard feelings between us. If they wanted to quit and could get more pay they should do so and I would respect them for it. If they went to work the next day I would look into the matter and perhaps give some of them more pay. This was interpreted to the Hungarians and then we had some refreshments and other entertainments, took a photograph of the party and they went home pleased. Every man was at work the next day. I afterward raised the wages of some of them and have had no further trouble. The most of those men are still with me.

I think labor troubles should be settled if possible without strikes.

SILK.

Dear Sir: In reference to the labor question about which you inquire, I don't know that any plan can be formulated to prevent strikes, or that any one method looking to that end could be fitted to all conditions. I have never had any plan nor have I ever needed one. I believe that all people no matter what their condition in life may be, or how extended or confined their opportunities, or what may be the measure of their intelligence beyond actual imbecility, can be contentedly controlled when they once become convinced that they always are and always will be treated with absolute justice in all things—that justice will be meted out flavored with generosity for misfortunes and charity for faults. Any body of working people once saturated with the conviction that the employer is their just friend, ready to help in case of need, and prompt to rectify a wrong, will never have a grievance to justify a strike, nor can be readily moved to create an imaginary one.

Many strikes are unwarranted but very many come from a lack of sympathy between the employer and his help. A latent grasping disposition fosters in the minds of both, simply because there is no bond between them.

Of course on the basis of the simple proposition, that one man has labor to sell which the other buys, and that the seller gets as much as he can, and the buyer pays as little as he must, any other bond between them seems superfluous, but neither factories nor households can be happily or prosperously run on any such unsympathetic principle, and for permanence and contentment some such bond is needful.

I have never had a strike or any discontent, nor do I ever expect one. If I find that any of my work is from some unforseen cause more difficult than calculated on, and does not afford the employe a fair average wage, I do not wait for a complaint but voluntarily increase the compensation. Of course this is not done at haphazard but judiciously.

Carried too far it might be fairly contended that this course would lead to imposition and insubordination. It need not be carried too far, it needs only the disposition to be just and fairly liberal. It needs also the iron hand in the silken glove always governed and controlled by a sincere desire to benefit and help those who under your supervision are honestly seeking their daily bread and benefiting you by their labor.

WOOLEN GOODS.

My Dear Sir: Replying to your favor of December 24th in relation to the labor question, I beg to say that we have no plan with which to deal with our hands other than good treatment and a proper respect for all, and with our assurance to them, that we will pay them as much wages as any of our neighboring mills will, or do pay for the same character of work. In an experience of some forty years a manager for other plants and as proprietor, I have never yet had a strike.

CARPETS.

Gentlemen: Replying to your inquiry of December 24th in reference to "Plan of Strike Prevention," would say that nearly twenty years ago we had a strike in our mill, which lasted about eight months. It was a very costly affair for both the work people and ourselves, and we hope it taught us both a lesson. We have for many years since that time been in the habit of meeting a committee of our work people every six months, at the beginning of each season and before our prices are made for goods, at which time an agreement for prices of labor for the coming six months is established.

We find this plan works admirably. Neither the men nor ourselves have ever failed to strictly comply with the terms, and we have gotten along very amicably, and with mutual respect ever since.

HOSIERY.

Dear Sir: In reply to your request as to how get along with my help, I would say that look on them as though they were my own people, use them with all kindness, but am firm in demanding what is right and expect them to do the best, and in return I give them the benefit of the quarter of a cent. I have no trouble.

PAPER BOXES.

Dear Sir: In replying to yours of the 24th inst., regarding the labor question, beg to say we have never had a strike among our employes.

When grievances are brought up we give the matter careful consideration and by argument or concession on our part adjust the difficulty to the satisfaction of all concerned; therefore have never adopted any particular plan.

Trusting this answers fully your letter, we are

CORDAGE.

Dear Sir: Your esteemed favor of 24th inst. was received, asking whether we had put into practice any plan that has proved successful in bringing about a better understanding with our employes.

We would state that we have never had any special plan, except the one adopted by the late Edwin H. Fitler, and which we have strictly carried out, which was the broad, liberal policy of avoiding little squabbles, and, in dull times that we have had, treating our people liberally and not taking advantage of conditions.

We feel that these few moves have been the means of promoting a good feeling on the part of our employes and they, therefore, have stood by us in prosperous times.

BOOTS AND SHOES.

We have a shoe manufacturers organization, composing all the principle manufacturers of the city. Our employes have an organization called the Central Convention of Shoe Workers. We have rules agreed upon by the two organizations. All disputes are referred to a joint board of arbitrators that meets semi-monthly, whose decisions are final. There can be no strike or lockouts. We have worked under this plan for fourteen years very satisfactorily to both parties. John G. Croxton has been President of the Shoe Manufacturers Association for thirteen years. George P. Schober is President of Joint Board of Arbitrators.

SHOES.

Dear Sir: In reply to yours of the 24th, we will endeavor to answer the questions in our report as correctly as possible, and hope same will be plain to you.

In regard to our plan of preventing strikes, will say that for the past fifteen years the shoe manufacturers of Philadelphia have settled all difficulties by a joint board of arbitration, composed of nine manufacturers and nine workmen. All members of this board must be actively engaged in the manufacture of boots and shoes. This is the only qualification necessary. You can get further particulars of the workings of this joint board of arbitration from our secretary, Mr. Howard L. Townsend, P. O. Box, No. 510, Philadelphia. I know the secret of the successful working of our joint board of arbitration is that we have always kept out all idlers, such as walking delegates who live on the troubles of their fellow men.

Dear Sir: In regard to the labor question as relates to our business, would say that some years ago we were troubled with strikes, but later on organized a joint board of arbitration composed of manufacturers and shoe workers in equal numbers. In addition to this each of the factories has a shop organization. All of the working people in the said factory being obliged to become members. Whenever any grievance is presented that could not be settled between the shop's committee and the manufacturer, it is referred to the joint board of arbitration, and for a number of years they have been able to settle the same without calling in a disinterested person as they are entitled to in case of a tie.

The operation of this plan has been for the most part excellent. Only in one case has it failed. About two years ago our lasters struck in September in violation of our yearly contract which runs from December to December, and although they were ordered back to work by the allied shop's organization and unanimously by the joint board of arbitration, they refused to comply and it put us to some inconvenience for a while, but with that exception, the plan has worked admirably and as it works under regular rules which all understand, and as the ultimate decision rests as much with the working people as with the manufacturer, its fairness seems to suggest itself to all and results have been very satisfactory.

Dear sir: In answer to this question will say that I think arbitration is the very best means to settle all labor disputes, and State authorities ought to appoint the arbitrators, or have them elected by the people of the State; also that the State pay the arbitrators. I have adopted the Boot and Shoe Union stamp, and signed their arbitration contract which I think good.

LEATHER.

Dear Sir: Answering yours relative to the labor question, we are very glad to say we have had very little to concern us on this score. There has never been a general strike in these works, some departments have made demands and some men have gone so far as to leave their work, and on one occasion only did one whole department, some 300 men, go out on strike. That question was settled by the introduction of machinery to do the work.

We have no definite plan "in bringing about a better understanding in adjusting grievances or in preventing or settling strikes," beyond the fact that all complaints and demands are promptly attended to and our people seem to be contented with their work.

We have here in flourishing condition a building and loan association; and also a beneficial association, as well also a well equipped social club house.

Dear Sir: The labor question that is agitating the public mind is no doubt a hard problem, and while all of us have some opinion on it and have had to face the demand for increase of wages by individual or organized labor, there seems to be no general accepted principle that will apply to its solution. Personally I think the chief difficulty in the prevention of strikes comes from the head of business concerns, if the head of a business concern employing a thousand hands was active in gaining the personal acquaintance of everyone in his employ, and speak a kind word or merely nod an approval when deserved, or correct mildly if needed it would go a great way toward curtailing the power a labor leader exercises over his followers. The labor leader knows his strength with the organization lies in his ability to enter into personal contact with the men, and he does it. When an employer has the respect of his employes he has won half the battle, if it comes at all. This has been my own plan with men up to at the most 35 or 40, and has served me well; where this can be done I believe it is the best plan that can be taken to prevent or settle strikes.

In the case of large trusts the problem is more difficult, because even when the labor question is divided up, the fixing of wages left to the managers of the individual plant, an outbreak of dissatisfaction at one place effects all of them generally. The most reasonable plan, I think, is that suggested by President Roosevelt's message, that all trusts be required to give the fullest publicity of their affairs to the public. It will not only protect the public, but will influence the conduct of labor as well; because the affairs of the people they work for are guarded so close they become suspicious that a great deal is made out of their labor, whereas if they were fully acquainted with the facts as they really are, they would know different.

Dear Sir: Replying to your letter of December 24th, in reference to labor troubles would say that we have been very fortunate in this respect as we find the best way to settle a strike is not to have one.

We work all departments in squads with a foreman over each department; each department is expected to turn out so much every week at so much money. If men stay out in any department the other men must do their work and they then divide among themselves the pay of the men who stayed out. We find in this way that the men will watch each other and insist upon each man holding up his end. This system of course has some disadvantages but we find the advantages largely outnumber the disadvantages, as we are always able to tell exactly what our goods cost us, and our men are generally contented because under our system they can usually make more money than they can for like work in other factories.

Trusting this will be of advantage to you, we remain.

THIS ADDITIONAL INFORMATION ASKED OF TANNERS.

"We would be glad if you would accompany your return with a letter setting forth the changes that have occurred in the tanning industry during the past ten years; the improvements as well as the difficulties you have to contend with by way of depletion in the stock of bark, domestic hides, etc."

TANNING.

I believe that capital frequently is labor unjustly accumulated, and if the capital were more liberally distributed among laborers there would be fewer strikes. Laborers are often compelled to buy all of their necessaries out of a shop kept by the very firm they are working for, and pay prices beyond any comparison with the wages they get for their labor. If we hire men I think they, without any pressure, should be allowed to buy where they please.

Now in regard to the supply of domestic hides, it is ample that trusts and corporations have so fixed the matter that the small tanner has no show. The hides on account of the hide trusts are too high and what is equally bad is the manner in which they are taken off. There was a time when if we bought Chicago packer skins as No. 1, we got them. To-day 33 per cent. of them make only No. 2 leather. Now something must be done to remedy this evil. We do not use foreign hides. The supply of bark is becoming short; for this there is a reason; the forest or mountain fires destroy bark, but this is not the greatest source of future shortness; it is that the fires going through the forest hunts the young trees and they never make a good growth. I think there should be a law passed making all men candidates for the penitentiary who without cause save to destroy, set fire to the mountains.

Dear Sir: In regards writing you about the tanning industry, would say, there have been lots of changes made in the past ten years and no doubt there will be as many more in the next ten years. Think all Pennsylvania tanners feel the scarcity of bark, and no doubt a good many are using extract, which shows good results to those who are familiar with using it. Think the hide situation would be greatly improved if the duty were removed, as the duty on hides helps the packers only, which are few in number, while shoe tanners, shoe manufacturers and the people who wear the shoes are the sufferers. In regard to the labor question, could not give you very much information in that line, as my experience in the tanning business for twenty years was always such that my employes never made a demand for increased wages, never threatened to strike, and always got along well together. I treat with each one individually when there is a grievance and never had to call the third party in to help settle the matter.

Gentlemen: In the matter of tanning industries will say I find that rough leather tanning is on the decline and has been for the past ten years. Domestic hides have increased in price since the fifteen cent tariff on imported hides. The exporters of leather receive a rebate on all leather exported, they have an advantage over the small tanneries who only furnish home markets. I am told by leather dealers in Boston that they can sell leather for export less than for home market for the reason thay get the rebate and at same time make a better margin. As to improvements in tanning. The fact that the large tanneries have adopted the plan of finishing the leather makes it bad for the small rough tanners, the large tanners can deliver this leather to the shoe factories before we can get ours ready to ship in the rough. I tanned 2,250 foreign hides (Indian kip), and have the leather yet on hand. The fact that their is no tariff on the small hides caused market to be flooded with this kind of leather, and it now is a drug on market. As to the labor question in my opinion if all manufacturers and corporations would not employ any person other than who belong to the labor unions it would save all further trouble. The fact that capital is concentrating and making combinations makes it necessary for labor to be well organized and hold together and deal with capital as a whole. The majority of our laboring class are well posted and know the profits made by the corporations. To protect themselves they must act as a unit. In my experience I have attended labor meetings and always found an intelligent quiet and orderly gathering, all business conducted in a peaceable manner. I can't say the same of our United States Congress at Washington, but this is digressing. In my tannery business I have two men who have worked for me fifteen years each, and as you will see by my report have received small wages. They are satisfied however, they are well acquainted with my business and know it will not allow any more.

Gentlemen: Yours of December 24th is received. Enclosed find the blank filled out as requested.

In reply to your inquiry as to the question of conciliation between employer and employes will say that I have never had the slightest difficulty or dispute with any of the men in my employ. They receive fair wages, are paid in cash weekly, and seem wholly satisfied. Each man seems to take an individual interest in the manufacture and production of stock. Under such circumstances there is no need of any particular plan of adjustment as we seem to understand each other at all times. The factory is kept running through good and bad times, and we believe if other manufacturers were in as close touch with their men as we are with ours there would be no labor troubles to speak of.

Regarding the other letter about tanners, will say in reference to the changes that have been made in the tannery industry during the past ten years, the improvements in machinery have been very great, lessening the cost of production. The increased knowledge acquired by tanners in extracting from their bark a much larger percentage of tannic acid has been a source of considerable saving in the quantity of bark used. The depletion of the stock of bark in the State had begun to be felt and shown in the rise in the price of bark. The stock of bark particularly of hemlock is fast disappearing. As the price of bark increases, thus making the cost of leather higher, other tanning agents are sought for, and are being largely employed. This depletion of the bark supply will eventually drive a great many tanners from the State. My suggestion is in line with other numerous well informed men that this bark supply of the oak kind can be maintained in the State. There are now thousands upon thousands of acres of waste land in the State of no value whatever for farming or other purposes, and the State should take an interest in cultivating the reproduction of oak forests as suggested in the forestry meetings of those interested in this particular science. Of course this will not benefit any of the present generation but as the State is a permanent institution it will yield benefit hereafter. If these waste lands could be made reproductive of timber and bark, which it can be under proper direction, and under State supervision, in future years the timber supply which is now nearly exhausted, would be increased, and the bark supply maintained sufficient to operate many large tanneries.

It is a fact that tannin produced from bark at a cost of six, seven or eight dollars per ton is cheaper and better than any of the substitutes that have as yet been discovered, and it should be the duty of the State to maintain and encourage such laws as would reproduce the article mentioned.

Regarding hides there seems to be no particular diminution in their quantity as far as I am able to observe.

Dear Sir: Yours of the 24th about strikes. We, like other similar industries, employing labor have threatened trouble occasionally, but we have had no real action. When our men become dissatisfied we at once ascertain the cause and if they are reasonable we try and make them happy, but if they are unreasonsble, we try and locate the ones leading and drop them when opportunity occurs for cause. We have from 350 to 500 men employed, and as they are altogether, we do not deal with committees. Committees are generally made up of individuals who are born kickers, who will submit to nothing but their own way. Instead of committees, when we find the men dissatisfied, we single out the class having the grievance, call them together and tell them where we stand and in such language that each man can hear and understand for himself what we have to say, and not rely on what some one else says. In this way we find that the majority of the men are always reasonable, and we can hold them, although others may try to lead them into trouble. A committee seldom reports to its body the exact language or intent of the empolyer, and we are fearful of being reported incorrectly, thus we prefer to state our case to the men as a whole, and to three men representing the whole. Of course in large corporations this is not practicable. Taken as a whole, we pay our men as high or higher wages than others in like business, and our men know this, and if they can do better elsewhere we either meet the conditions, or let them go. We anticipate no trouble during the coming year, as we now have a clear and distinct understanding with all our men.

Dear Sir: In reply to your inquiry of December 24th will say that I retired from the tanning business July, 1900. Being you ask my experience in the labor question will give you a short sketch of my life.

In July, 1860, I was apprenticed for four years to a Mr. Vogel. Terms were, my father was to furnish the clothes, Mr. Vogel to furnish board, I to work without pay, and he was to teach me the art of tanning. While serving there I never received a cent for my labor, but one Christmas he gave me twenty-five cents. In 1865 I had full charge of my father's tannery, being then 19 years old, my father being a passive man and not caring about the cares of business just put the whole responsibility on my shoulders.

So you see I conducted business from 1865 until 1900, being a term of 35 years and in this time employed from 20 to 45 men, the last 15 years not less than 45.

I was always successful, never had a strike or dispute with my help, and I attribute it to the following rules. I never under any circumstances would give employment to a union man.

2d. I never asked any thing unreasonable from my men.

3d. I always treated my men as my equal in the tannery or out, in fact wherever we happened to meet.

I will mention one case which comes to my mind where the men thought I imposed on them, which we settled in the following manner:

I complained to my beam men that they were not doing work enough. They thought otherwise. They were hand fleshing sixty sides per day per man, I wanted eighty pieces.

So I pulled off my coat and showed them that I could do 160 pieces in 10 hours and then asked them if they were not ashamed of themselves, when only asked to do one-half what I could do? That settled that point. They got a new move on and it was only a few days before eighty pieces was an easy days work.

ANALYSIS.

Before entering up a review of the several statistical presentations contained in this report we desire to give a belated acknowledgment of the courtesies extended by Laird, Schober and Company, and The Harrisburg Boot and Shoe Company for the privilege of illustrations from their factories showing the process of shoe manufacture and of like courtesies extended by Geo. Watkinson & Co., showing the method of making rubber boots and shoes, and of courtesies shown by American Cement Company, in the privilege of illustrations of cement works and quarries. Also to acknowledge the courtesy of Lathbury and Spackman in allowing the reproduction of cuts showing modern crushers, testing machinery, etc., used in the manufacture of cement.

The first presentation of statistical tables will be found on page 83, Comparative Statistics of Manufactures, 1892 Series. As with 1901 the series ends, the natural inquiry would be, what has it shown—what has it accomplished? In considering this question it must be borne in mind that the 354 establishments represented by the 44 industries are the same establishments throughout the ten years, 1892 to 1901, inclusive. If a sufficient number of representative plants are considered in each industry, the work must have interest as portraying general business conditions, particularly in helping the mind to conclusions that without data would be formless and shapeless. History, if correct and impartial, is of value. Statistics, even in the form of a chronology if possessing like virtue must have like comparative value. Marked changes have taken place in the industrial world during these ten years. The series was established in 1892 with prosperity, dropped into adverse conditions in 1893, 1894 and 1895; its closing years however were marked by an era of prosperity for a number of the industries without a parallel in the history of the country.

The tables presented in this series from year to year show, with much accuracy, the effect that the varied conditions have had upon the respective industries. The exception, however, to this will be found in such industries as have been reduced to too small a number of establishments to be representative. The occasion of the reduction has been the retirement from business, failures, or possibly combined ownerships, the combining with establishments not considered in this series and in consequence separation being impracticable. In several instances this work of depletion has resulted in but a single establishment being left to represent the industry.

We submit herewith tables of comparison, 1901 with 1894, showing the comparative condition of wage earners. While 1894 has been taken as the year of the greatest depression, some of the industries considered were more seriously affected in 1893, or perhaps in 1895. In making comparison the single establishment industries have been eliminated, leaving but forty-one of the forty-four industries represented in the 1892 Series to be considered in this work of retrospection.

COMPARISON OF VALUE OF PRODUCTION BY THE SAME ESTABLISHMENTS FOR THE YEARS ENDING 1894 AND 1901, AS DEDUCTED FROM THE 1892 SERIES.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase(+) or decrease (—) 1894 as compared with 1901.	Per centage of increase(+) or decrease (—).
PIG IRON.				
1894,	13	$5,580,847	$	
1901,	13	13,645,721	+8,064,874	+144.5
ROLLING MILLS—GENERAL PRODUCTS.				
1894,	32	72,055,767	....	....
1901,	32	196,936,504	+124,880,737	+173.3
SHEETS AND PLATES.				
1894,	14	7,798,069	....	....
1901,	14	28,209,826	+20,411,757	+262.7
PLATE AND BAR.				
1894,	3	2,505,387	....	....
1901,	3	4,246,894	+1,741,507	+69.5
STEEL.				
1894,	13	15,781,892	....	....
1901,	13	37,692,910	+21,911,018	+138.8
ARCHITECTURAL CAST AND WROUGHT IRON WORK.				
1894,	4	1,407,416	....	....
1901,	4	7,210,281	+5,802,865	+412.3
IRON FORGING.				
1894,	4	604,106	....	....
1901,	4	1,127,833	+523,728	+86.7
NAILS AND SPIKES.				
1894,	10	3,275,789	....	....
1901,	10	3,036,702	—239,087	—7.3

VALUE OF PRODUCTION—Continued.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) 1894 as compared with 1901.	Per centage of increase (+) or decrease (—).
NUTS AND BOLTS.				
1894,	2	$844,782	$	
1901,	2	2,184,110	+1,339,328	+158.5
PIPES AND TUBES.				
1894,	4	1,927,748	....	....
1901,	4	6,052,557	+4,124,809	+214.0
HARDWARE.				
1894,	4	1,040,023	....	....
1901,	4	1,928,480	+888,457	+85.4
MALLEABLE IRON.				
1894,	2	296,371	....	....
1901,	2	860,568	+564,197	+190.4
SAWS, EDGE TOOLS, ETC.				
1894,	5	2,402,820	....	....
1901,	5	5,095,464	+2,692,644	+112.1
METAL AND METALLIC GOODS.				
1894,	8	2,060,465	....	....
1901,	8	2,785,309	+724,844	+35.2
LOCOMOTIVES AND ENGINES.				
1894,	14	9,629,617	....	....
1901,	14	37,028,910	+27,399,293	+288.5
ENGINES AND BOILERS.				
1894,	6	1,625,120	....	....
1901,	6	3,392,325	+1,767,205	+108.7

VALUE OF PRODUCTION—Continued.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) 1894 as compared with 1901.	Per centage of increase (+) or decrease (—).
BOILERS.				
1894, ...	7	$1,046,140	$	
1901, ...	7	1,885,929	+839,789	+80.3
BRIDGES.				
1894, ...	4	1,292,171	....	....
1901, ...	4	3,575,000	+2,282,829	+176.7
CAR SPRINGS.				
1894, ...	1	331,010	....	....
1901, ...	1	1,070,693	+793 683	+223.5
CAR COUPLERS.				
1894, ...	1	510,732	....	....
1901, ...	1	1,052,300	+541,568	+106.0
CARS AND CAR WHEELS.				
1894, ...	8	4,090,667	....	....
1901, ...	8	5,739,513	+1,648,846	+40.3
WINDOW GLASS, BOTTLE AND TABLE GOODS.				
1894, ...	17	4,620,213	....	....
1901, ...	17	5,204,192	+583,979	+12.6
SHIP BUILDING.				
1894, ...	1	506,192	....	....
1901, ...	1	1,170,750	+664,558	+131.3
PIANOS AND ORGANS.				
1894, ...	2	139,818	....	....
1901, ...	2	211,177	+71,359	+51.0
RUBBER BOOTS AND SHOES.				
1894, ...	1	711,056	....	....
1901, ...	1	941,933	+230,877	+32.5

VALUE OF PRODUCTION—Continued.

Character of Industry and Years.	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) 1894 as compared with 1901.	Per centage of increase (+) or decrease (—).
CARBONS.				
1894,	1	$85,000	$	
1901,	1	60,846	—24,154	—28.4
CARPETS.				
1894,	24	8,222,838	....	....
1901,	24	9,718,688	+1,495,850	+18.2
WOOLEN YARNS.				
1894,	10	1,999,184	....	....
1901,	10	4,781,637	+2,782,453	+139.2
COTTON YARNS.				
1894,	3	438,901	....	....
1901,	3	479,046	+40,145	+9.1
WORSTED YARNS.				
1894,	3	1,031,841	....	....
1901,	3	1,419,743	+387,902	+37.6
MISCELLANEOUS YARNS.				
1894,	9	764,435	....	....
1901,	9	1,025,967	+261,532	+34.2
WOOLEN GOODS.				
1894,	16	5,946,052	....	....
1901,	16	7,845,888	+1,899,836	+31.9
COTTON GOODS.				
1894,	17	7,171,910	....	....
1901,	17	8,250,689	+1,078,779	+15.4
COTTON AND WOOLEN GOODS.				
1894,	12	1,408,290	....	....
1901,	12	1,640,565	+232,275	+16.5

VALUE OF PRODUCTION—Concluded.

Character of Industry and Years	Number of establishments considered.	Value of production.	Increase (+) or decrease (—) 1894 as compared with 1901.	Per centage of increase (+) or decrease (—).
WORSTED GOODS.				
1894,	3	$754,032	$	
1901,	3	929,687	+175,655	+23.3
KNIT GOODS.				
1894,	5	812,353	....	....
1901,	5	973,529	+161,176	+19.8
CHENILLE GOODS.				
1894,	5	1,639,750	....	....
1901,	5	2,105,386	+465,636	+28.4
MIXED TEXTILES.				
1894,	9	2,458,285	....	....
1901,	9	2,736,137	+277,852	+10.9
TAPESTRY AND TABLE COVERS.				
1894,	3	309,906	....	....
1901,	3	457,030	+147,124	+47.5
HOSIERY.				
1894,	13	2,090,722	....	....
1901,	13	2,558,590	+467,868	+22.4
HOSIERY AND KNIT GOODS.				
1894,	3	677,810	....	....
1901,	3	596,327	—81,483	—12.0
SILK BROAD GOODS.				
1894,	4	2,624,564	....	....
1901,	4	4,948,756	+2,324,192	+88.5

COMPARISON OF NUMBER OF PERSONS EMPLOYED IN THE SAME ESTABLISHMENTS FOR THE YEARS ENDING 1894 AND 1901, AS DEDUCTED FROM THE 1892 SERIES.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) 1894 as compared with 1901.	Per centage of increase (+) or decrease (—).
PIG IRON.				
1901,	13	2,459	+708	+40.4
ROLLING MILLS—GENERAL PRODUCTS.				
1894,	32	30,120	......	......
1901,	32	38,724	+8,604	+22.2
SHEETS AND PLATES.				
1894,	14	4,294	......	......
1901,	14	9,456	+5,162	+120.2
PLATE AND BAR.				
1894,	3	1,735	......	......
1901,	3	1,595	—140	—8.1
STEEL.				
1894,	13	9,778	......	......
1901,	13	17,480	+7,702	+78.8
ARCHITECTURAL CAST AND WROUGHT IRON WORK.				
1894.	4	976	......	......
1901,	4	2,601	+1,625	+166.5
IRON FORGING.				
1894,	4	469	......	......
1901,	4	160	—309	—65.9
NAILS AND SPIKES.				
1894,	10	2,305	......	......
1901,	10	1,607	—698	—30.3

NUMBER OF PERSONS EMPLOYED—Continued.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) 1894 as compared with 1901.	Per centage of increase (+) or decrease (—).
NUTS AND BOLTS.				
1894,	2	560	......	......
1901,	2	1,021	+561	+100.2
PIPES AND TUBES.				
1894,	4	1,263	......	......
1901,	4	2,364	+1,101	+87.2
FOUNDRIES AND MACHINE SHOPS.				
1894,	25	2,603	......	......
1901,	25	4,477	+1,874	+72.0
STOVES, RANGES, HEATERS, ETC.				
1894,	9	1,238	......	......
1901,	9	1,324	+86	+7.0
HARDWARE.				
1894,	4	1,464	......	......
1901,	4	1,751	+287	+19.6
MALLEABLE IRON.				
1894,	2	293	......	......
1901,	2	799	+506	+172.7
SAWS, EDGE TOOLS, ETC.				
1894,	5	1,965	......	......
1901,	5	3,360	+1,395	+71.0
METAL AND METALLIC GOODS.				
1894,	8	1,500	......	......
1901,	8	1,622	+122	+8.1
LOCOMOTIVES AND ENGINES.				
1894,	14	8,441	......	......
1901,	14	19,058	+10,617	+125.8

NUMBER OF PERSONS EMPLOYED—Continued.

Character of Industry and Years.	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) 1894 as compared with 1901.	Per centage of increase (+) or decrease (—).
ENGINES AND BOILERS.				
1894,	6	992	......	......
1901,	6	1,701	+709	+70.5
BOILERS.				
1894,	7	691	......	......
1901,	7	708	+17	+2.5
BRIDGES.				
1894,	4	647	......	......
1901,	4	1,459	+812	+125.5
CARS AND CAR WHEELS.				
1894,	8	2,830	......	......
1901,	8	3,334	+504	+17.8
WINDOW GLASS, BOTTLE AND TABLE GOODS.				
1894,	17	5,152	......	......
1901,	17	5,367	+215	+4.2
PIANOS AND ORGANS.				
1894,	2	162	......	......
190,	2	171	+9	+5.5.
CARPETS.				
1894,	24	5,326	......	......
1901,	24	5,956	+630	+11.8
WOOLEN YARNS.				
1894,	10	1,148	......	......
1901,	10	1,959	+811	+70.6
COTTON YARNS.				
1894,	3	270	......	......
1901,	3	257	—13	—4.8

NUMBER OF PERSONS EMPLOYED—Continued.

Character of Industry and Year	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) 1894 as compared with 1901.	Per centage of increase (+) or decrease (—).
WORSTED YARNS.				
1894,	3	722	......	......
1901,	3	849	+127	+17.6
MISCELLANEOUS YARNS.				
1894,	9	418	......	......
1901,	9	381	—37	—8.8
WOOLEN GOODS.				
1894,	16	4,856	......	......
1901,	16	4,544	—312	—6.4
COTTON GOODS.				
1894,	17	3,687	......	......
1901,	17	3,850	+163	+4.4
COTTON AND WOOLEN GOODS.				
1894,	12	1,248	......	......
1901,	12	1,165	—83	—6.6
WORSTED GOODS.				
1894,	3	461	......	......
1901,	3	416	—45	—9.8
KNIT GOODS.				
1894,	5	807	......	......
1901,	5	1,064	+257	+31.8
CHENILLE GOODS.				
1894,	5	1,176	......	......
1901,	5	1,492	+316	+26.9
MIXED TEXTILES.				
1894,	9	1,847	......	......
1901,	9	2,644	+797	+43.2

NUMBER OF PERSONS EMPLOYED—Concluded.

Character of Industry and Years	Number of establishments considered.	Number of persons employed.	Increase (+) or decrease (—) 1894 as compared with 1901.	Per centage of increase (+) or decrease (—).
TAPESTRY AND TABLE COVERS.				
1894,	3	229	......	......
1901,	3	316	+87	+38.0
HOSIERY.				
1894,	13	2,589	......	......
1901,	13	2,900	+311	+12.0
HOSIERY AND KNIT GOODS.				
1894,	3	600	......	......
1901,	3	478	—122	—20.3
SILK BROAD GOODS.				
1894,	4	1,446	......	......
1901,	4	3,285	+1,739	+120.3

COMPARISON OF YEARLY EARNINGS IN THE SAME ESTABLISHMENTS FOR THE YEARS ENDING 1894 AND 1901, AS DEDUCTED FROM THE 1892 SERIES.

Character of Industry and Years.	Number of establishments considered.	Yearly earnings.	Increase (+) or decrease (—) 1894 as compared with 1901.	Per centage of increase (+) or decrease (—).
PIG IRON.				
1894,	13	$382 09	$	
1901,	13	576 72	+194 64	+50.9
ROLLING MILLS—GENERAL PRODUCTS.				
1894,	32	482 65	....	....
1901,	32	692 10	+209 45	+43.4
SHEETS AND PLATES.				
1894,	14	524 31	....	....
1901,	14	577 28	+52 97	+10.1
PLATE AND BAR.				
1894,	3	401 71	....	....
1901,	3	641 12	+239 41	+59.6
STEEL.				
1894,	13	459 41	....	....
1901,	13	555 94	+96 53	+21.0
ARCHITECTURAL CAST AND WROUGHT IRON WORK.				
1894,	4	500 19	....	....
1901,	4	541 36	+41 17	+8.2
IRON FORGING.				
1894,	4	506 31	....	....
1901,	4	740 47	+234 16	+46.2
CUT NAILS AND SPIKES.				
1894,	10	334 21	....	....
1901,	10	443 11	+108 90	+32.6

YEARLY EARNINGS—Continued.

Character of Industry and Years.	Number of establishments considered.	Yearly earnings.	Increase(+) or decrease (—) 1894 as compared with 1901.	Per centage of increase(+) or decrease (—).
NUTS AND BOLTS.				
1894,	2	$372 95	$	
1901,	2	406 38	+33 43	+8.9
PIPES AND TUBES.				
1894,	4	406 38	....	....
1901,	4	521 14	+114 76	+28.0
FOUNDRIES AND MACHINE SHOPS.				
1894,	25	504 53	....	....
1901,	25	567 43	+62 90	+12.4
STOVES, RANGES, HEATERS, ETC.				
1894,	9	425 06	....	....
1901,	9	501 31	+76 25	+17.9
HARDWARE.				
1894,	4	337 79	....	....
1901,	4	398 70	+60 91	+18.0
MALLEABLE IRON.				
1894,	2	442 44	....	....
1901,	2	553 05	+110 61	+25.0
SAWS, EDGED TOOLS, ETC.				
1894,	5	444 05	....	....
1901,	5	527 39	+83 34	+18.8
METAL AND METALLIC GOODS.				
1894,	8	450 35	....	....
1901,	8	508 46	+58 11	+12.9
LOCOMOTIVES AND ENGINES.				
1894,	14	477 72	....	....
1901,	14	625 99	+148 27	+31.0

YEARLY EARNINGS—Continued.

Character of Industry and Years.	Number of establishments considered.	Yearly earnings.	Increase(+) or decrease (—) 1894 as compared with 1901.	Per centage of increase(+) or decrease (—).
ENGINES AND BOILERS.				
1894,	6	$528 49	$	
1901,	6	530 96	+2 47	+0.4
BOILERS.				
1894,	7	319 23	....	....
1901,	7	484 35	+165 12	+51.7
BRIDGES.				
1894,	4	405 31	....	....
1901,	4	553 43	+148 12	+36.5
CARS AND CAR WHEELS.				
1894,	8	456 65	....	....
1901,	8	564 10	+107 55	+23.5
WINDOW GLASS, BOTTLE AND TABLE GOODS.				
1894,	17	430 73	....	....
1901,	17	460 45	+29 72	+6.9
PIANOS AND ORGANS.				
1894,	2	285 10	....	....
1901,	2	437 73	+152 63	+53.5
CARPETS.				
1894,	24	355 30	....	....
1901,	24	389 71	+34 41	+9.7
WOOLEN YARNS.				
1894,	10	249 61	....	....
1901,	10	311 60	+61 99	+24.8
COTTON YARNS.				
1894,	3	262 90	....	....
1901,	3	343 03	+80 13	+30.5

YEARLY EARNINGS—Continued.

Character of Industry and Years.	Number of establishments considered.	Yearly earnings.	Increase (+) or decrease (—) 1894 as compared with 1901.	Per centage of increase (+) or decrease (—).
WORSTED YARNS.				
1894,	3	$279 20	$	
1901,	3	281 07	+1 87	+0.7
MISCELLANEOUS YARNS.				
1894,	9	330 31	....	....
1901,	9	411 02	+80 71	+24.4
WOOLEN GOODS.				
1894,	16	286 00	....	....
1901,	16	354 35	+68 35	+23.9
COTTON GOODS.				
1894,	17	317 75	....	....
1901,	17	352 53	+34 78	+10.9
COTTON AND WOOLEN GOODS.				
1894,	12	290 19	....	....
1901,	12	310 79	+20 60	+7.0
WORSTED GOODS.				
1894,	3	344 35	....	....
1901,	3	417 86	+73 51	+21.3
KNIT GOODS.				
1894,	5	254 93	....	....
1901,	5	230 87	—24 06	—9.4
CHENILLE GOODS.				
1894,	5	376 55	....	....
1901,	5	419 50	+42 95	+11.4
MIXED TEXTILES.				
1894,	9	287 86	....	....
1901,	9	313 92	+26 06	+9.0

YEARLY EARNINGS—Concluded.

Character of Industry and Years.	Number of establishments considered.	Yearly earnings.	Increase (+) or decrease (—) 1894 as compared with 1901.	Per centage of increase (+) or decrease (—).
TAPESTRY AND TABLE COVERS.				
1894, ...	3	$400 53	$	
1901, ...	3	426 34	+25 81	+6.4
HOSIERY.				
1894, ...	13	219 16	....	....
1901, ...	13	273 62	+54 46	+24.8
HOSIERY AND KNIT GOODS.				
1894, ...	3	319 67	....	....
1901, ...	3	309 32	—10 35	—3.2
SILK BROAD GOODS.				
1894, ...	4	250 43	....	....
1901, ...	4	231 76	—18 67	—7.5

COMPARISON OF DAILY WAGE IN THE SAME ESTABLISHMENTS FOR THE YEARS ENDING 1894 AND 1901, AS DEDUCTED FROM THE 1892 SERIES.

Character of Industry and Years.	Number of establishments considered.	Daily wage.	Increase(+) or decrease (—) 1894 as compared with 1901.	Per centage of increase(+) or decrease (—).
PIG IRON.				
1894,	13	$1 26	Cts.	
1901,	13	1 71	+45	+35.7
ROLLING MILLS—GENERAL PRODUCT.				
1894,	32	1 61	......	......
1901,	32	2 19	+58	+36.0
SHEETS AND PLATES.				
1894,	14	1 97	......	......
1901,	14	2 08	+11	+5.6
PLATE AND BAR.				
1894,	3	1 73	......	......
1901,	3	2 20	+47	+27.1
STEEL.				
1894,	13	1 69	......	......
1901,	13	1 88	+19	+11.2
ARCHITECTURAL CAST AND WROUGHT IRON WORK.				
1894,	4	1 63	......	......
1901,	4	1 77	+14	+8.6
IRON FORGING.				
1894,	4	1 71	......	......
1901,	4	2 51	+80	+46.6
CUT NAILS AND SPIKES.				
1894,	10	1 47	......	......
1901,	10	1 67	+20	+13.6

DAILY WAGE—Continued.

Character of Industry and Years.	Number of establishments considered.	Daily wage.	Increase(+) or decrease (—) 1894 as compared with 1901.	Per centage of increase(+) or decrease (—).
NUTS AND BOLTS.				
1894,	2	$1 30	Cts.	
1901,	2	1 42	+12	+9.2
PIPES AND TUBES.				
1894,	4	1 52	......	......
1901,	4	1 72	+20	+13.1
FOUNDRIES AND MACHINE SHOPS.				
1894,	25	1 79	......	......
1901,	25	1 87	+08	+4.5
STOVES, RANGES, HEATERS, ETC.				
1894,	9	2 02	......	......
1901,	9	2 14	+12	+5.9
HARDWARE.				
1894,	4	1 65	......	......
1901,	4	1 36	—29	—17.6
MALLEABLE IRON.				
1894,	2	1 79	......	......
1901,	2	1 83	+04	+2.2
SAWS, EDGED TOOLS, ETC.				
1894,	5	1 55	......	......
1901,	5	1 75	+20	+12.9
METAL AND METALLIC GOODS.				
1894,	8	1 57	......	......
1901,	8	1 56	—01	—0.6
LOCOMOTIVES AND ENGINES.				
1894,	14	1 79	......	......
1901,	14	2 06	+27	+15.1

DAILY WAGE—Continued.

Character of Industry and Years.	Number of establishments considered.	Daily wage.	Increase(+) or decrease (—) 1894 as compared with 1901.	Per centage of increase(+) or decrease (—).
ENGINES AND BOILERS.				
1894,	6	$1 77	Cts.	
1901,	6	1 76	—01	—0.6
BOILERS.				
1894,	7	1 45	......	......
1901,	7	1 57	+12	+8.3
BRIDGES.				
1894,	4	1 33	......	......
1901,	4	1 79	+46	+34.6
CARS AND CAR WHEELS.				
1894,	8	1 75	......	......
1901,	8	1 85	+10	+5.7
WINDOW GLASS, BOTTLE AND TABLE GOODS.				
1894,	17	1 65	......	......
1901,	17	1 96	+31	+19.3
PIANOS AND ORGANS.				
1894,	2	1 10	......	......
1901,	2	1 46	+36	+32.7
CARPETS.				
1894,	24	1 37	......	......
1901,	24	1 34	—03	—0.2
WOOLEN YARNS.				
1894,	10	90	......	......
1901,	10	1 05	+15	+16.6
COTTON YARNS.				
1894,	3	1 01	......	......
1901,	3	1 19	+18	+17.8

DAILY WAGE—Continued.

Character of Industry and Years.	Number of establishments considered.	Daily wage	Increase (+) or decrease (—) 1894 as compared with 1901.	Per centage of increase (+) or decrease (—).
WORSTED YARNS.				
1894, ...	3	$1 01	Cts.	
1901, ...	3	95	—06	—0.6
MISCELLANEOUS YARNS.				
1894, ...	9	1 26	......	......
1901, ...	9	1 42	+16	+12.7
WOOLEN GOODS.				
1894, ...	16	1 03	......	......
1901, ...	16	1 72	+69	+67.0
COTTON GOODS.				
1894, ...	17	1 29	......	......
1901, ...	17	1 25	—04	—0 3
COTTON AND WOOLEN GOODS.				
1894, ...	12	1 12	......	......
1901, ...	12	1 18	+06	+5.3
WORSTED GOODS.				
1894, ...	3	1 45	......	......
1901, ...	3	1 65	+20	+13.8
KNIT GOODS.				
1894, ...	5	1 00	......	......
1901, ...	5	90	—10	—10.0
CHENILLE GOODS.				
1894, ...	5	1 26	......	......
1901, ...	5	1 49	+23	+18.2
MIXED TEXTILES.				
1894, ...	9	1 00	......	......
1901, ...	9	1 08	+08	+8.0

DAILY WAGE—Concluded.

Character of Industry and Years.	Number of establishments considered.	Daily wage.	Increase (+) or decrease (—) 1894 as compared with 1901.	Per centage of increase (+) or decrease (—).
TAPESTRY AND TABLE COVERS.				
1894,	3	$1 33	Cts.	
1901,	3	1 54	+21	+15 8
HOSIERY.				
1894,	13	80	......	......
1901,	13	94	+14	+17.5
HOSIERY AND KNIT GOODS.				
1894,	3	1 07	......	......
1901,	3	1 04	—03	—2.8
SILK BROAD GOODS.				
1894,	4	86	......	......
1901,	4	86	......	......

It will be observed from this presentation that increases were shown in yearly earnings in all but three of the industries, and in some cases an increase of a very marked nature, the range being as high as fifty-nine per cent. Thirty-two of the industries show increases in the number of wage earners. In some the increase is most pronounced, reaching as high as 172 per cent. The increase in daily wage, as is well understood, does not necessarily follow the increase in yearly earnings, as the daily wage may remain the same and the yearly earnings show a very large increase, the increase resulting from increased days of employment. However, it will be noted that thirty-two of the forty-one industries show increases in average daily wage, the increase ranging from four cents to eighty cents, and that eight show a decrease, the decrease ranging from one cent to twenty-nine cents. And it will be noted that aside from this twenty-nine cents of a decrease, no other decrease exceeded ten cents. In one industry the average daily wage remained unchanged.

It might be well to observe that the thirteen pig iron plants used in this series are not, as to the question of wages, representative of the pig iron industry of the State. The unusual production of pig iron in the western part of the State for the past few years where pig iron wages, for reasons, are higher than in the eastern part of the State, accounts largely for this difference. While these thirteen establishments only show an average daily wage of $1.71, it will be observed in the presentation on other pages of the report showing the entire production of pig iron of the State, that the average was $1.85. However, for comparative purposes the presentation has not thereby lost its virtue.

Comparison of totals of all establishments in this series for the entire ten years will be found on page 259. It will be observed that the total number of wage earners employed in 1901 was 156,424 as against 109,383 in 1894, an increase of 47,041 or forty-three per cent., and that 19,542 more wage earners were employed in 1901, at the close of the series, than were employed in 1892, at its beginning, an increase over that prosperous year of fourteen per cent. The aggregate wages paid out in 1901 was $85,219,969 as against $45,229,667 in 1894, an increase of $39,990,302 or over eighty-eight per cent. and an increase over 1892 of $17,888,093, or over twenty-six per cent. The average yearly earnings were $544.80 in 1901 as against $413.50 in 1894, an increase of $131.30, or nearly thirty-two per cent, and an increase over 1892 of $52.90 or nearly 11 per cent.

VALUE OF PRODUCTION.

On page 260 comparison is made of values for the ten years. The value of the production for 1901 is shown to have been $432,994,653 as against $185,626,971 in 1894, an increase of $247,367,682 or 133 per cent, and an increase over 1892 of $163,542,188 or over 60 per cent.

1896 COMPARATIVE SERIES.

The presentation of this series commences with page 261. As the series was established in 1896 it has four years yet to run. More details are set forth than in the 1892 series, the important additions being capital invested and cost of the basic materials. At the same time more attention is paid to the production. Where the output is in such form as to admit of comparison, return is secured and the comparison made. The presentation in this series consists of eighty-eight industries, representing 801 establishments, and like the 1892 series comparison is made with the same establishments. There having been no year of depression since 1896, marked changes in prosperity and adversity cannot be shown as set forth in deductions from the 1892 series.

It is, however, of interest to note that seventy-three of the eighty-eight industries show increases in yearly earnings 1901 over 1896. The following tables are submitted showing these increases, and the decreases in the remaining fifteen industries, together with a presentation of the number of wage earners immediately affected thereby.

THE 73 INDUSTRIES SHOWING INCREASES IN YEARLY EARNINGS 1901 OVER 1896, TOGETHER WITH THE NUMBER OF WAGE-EARNERS IMMEDIATELY AFFECTED THEREBY AS DEDUCTED FROM THE 1896 COMPARATIVE SERIES.

Industries.	Number of wage-earners in 1901.	Increase in yearly earnings 1901 over 1896.
Billets, slabs, blooms, etc.,	1,838	$321 31
Tool steel,	167	235 36
Chenille goods,	680	171 37
Metal and metallic goods,	252	161 37
Wire nails and rivets,	255	133 29
Locomotives and cars built and repaired,	7,498	127 14
Saws,	57	123 97
Car springs, axles and railway supplies,	9,737	104 93
Wall paper,	371	102 66
Carpets,	2,801	101 35
Iron chains,	288	99 59
Slate roofing, etc., tonnage,	907	95 54
Foundries and machine shops,	3,622	95 11
Wrought iron pipes and tubes,	6,574	94 46
Shovels, spades, scoops, etc.,	592	89 19
Glazed and chrome kid,	4,783	88 26
Wrenches, picks, etc.,	357	84 36
Book binding,	188	80 99
Stoves, heaters, ranges, etc.,	3,773	80 42
Woolen and worsted yarns,	1,658	79 78
Fur and felt hats,	2,060	76 05
Slate roofing, etc., squares,	1,578	73 27
Window glass, bottles and table goods,	8,820	71 90
Brass, copper and bronze goods,	1,760	70 37
Agricultural implements,	1,594	68 37
Electrical supplies,	7,212	66 00
Cast iron pipe,	841	65 75
Upholstery goods,	2,216	64 76
Locomotives, stationary engines, etc.,	13,298	63 74
Woolen and worsted fabrics,	3,294	62 42
Iron and steel bridges,	2,076	62 06
Tacks and small nails,	142	60 93
Hats and caps,	691	58 18
Lace goods,	1,238	56 01
Silk ribbons,	909	53 21
Cotton goods,	3,112	53 09
Iron and steel forgings,	482	50 80

INCREASES IN YEARLY EARNINGS, 1901 OVER 1896, TOGETHER WITH THE NUMBER OF WAGE-EARNERS IMMEDIATELY AFFECTED THEREBY, AS DEDUCTED FROM THE 1896 COMPARATIVE SERIES.

Industries.	Number of wage-earners in 1901.	Increase in yearly earnings 1901 over 1896.
Carpet yarns,	688	$50 21
Plumbers' supplies,	1,086	49 77
Paving brick,	553	47 54
Cotton yarns,	720	46 49
Woolen and worsted cassimeres,	1,971	46 29
Paper manufactories,	1,725	46 22
Umbrellas and parasols,	522	45 01
Rugs, yarns, etc.,	3,209	45 00
Files,	415	43 46
Malleable iron,	1,905	42 43
Bicycles,	97	42 15
Cordage, rope, twine, etc.,	2,294	41 33
Steel castings,	1,478	41 29
Engines, boilers, etc.,	2,533	40 75
Hosiery,	6,756	39 88
Fire brick,	3,787	39 16
Men's, women's, misses' and children's shoes,	3,524	37 07
Cotton and woolen cloths,	5,341	33 96
Building brick,	1,954	33 89
Wool hats,	538	30 60
Hardware specialties,	3,133	30 45
Boilers, tanks, stacks, etc.,	2,135	29 41
Suspenders,	198	28 86
Safes and vault doors,	224	28 38
Cigars,	8,866	27 93
Shirts and shirt waists,	2,419	27 82
Machinery,	6,342	25 77
Dress trimmings, braids, etc.,	1,669	25 31
Scales, etc.,	183	22 81
Building and structural iron work,	2,286	16 60
Edge tools,	1,097	14 69
Wagon and carriage axles and springs,	618	11 96
Paper boxes and envelopes,	2,138	8 78
Wire goods,	242	8 39
Pianos and organs,	150	2 73
Iron specialties,	53	34

THE 15 INDUSTRIES SHOWING DECREASES IN YEARLY EARNINGS 1901 OVER 1896, TOGETHER WITH THE NUMBER OF WAGE-EARNERS IMMEDIATELY AFFECTED THEREBY AS DEDUCTED FROM THE 1896 COMPARATIVE SERIES.

Industries.	Number of wage-earners in 1901.	Decrease in yearly earnings 1901 over 1896.
Steam pumps, etc.,	231	$99 56
Neckwear,	181	66 68
Wire,	258	47 70
Silk broad goods, thrown silk, etc.,	4,033	32 72
Woolen blankets, flannels, etc.,	912	30 13
Silk broad goods and ribbons,	2,400	24 07
Bolts, nuts, etc.,	1,573	20 64
Worsted woolen and cotton yarns,	2,277	12 54
Wire rope,	393	11 96
Pottery,	171	10 83
Bath boilers, tanks, etc.,	44	9 81
Tinware,	461	9 71
Knit goods, underwear,	2,980	5 02
Iron fences and railings.	220	4 75
Iron vessels and engines,	6,268	1 55

The total number of wage earners employed in this series in 1901 was 192,972 as against 131,260 in 1896, an increase of 61,712 or over 47 per cent. The yearly earnings were $499.95 as against $381.56 in 1896, an increase of 67.39, or 17.9 per cent. It will be remembered that all statements of earnings include both skilled and unskilled labor.

It will be noticed that this series embraces many textile and other industries in which the employment of female help not only predominates, but in which many children are employed.

VALUE OF PRODUCTION.

The value of the entire production as set forth in this series for 1901 was $370,625,709, as against $188,038,106 in 1896, an increase of $182,587,603, or 97.1 per cent.

The capital invested in 1901 was $253,190,931, an increase over 1896 of $53,081,066, or 26.5 per cent.

PIG IRON.

Pennsylvania produced 7,364,295 gross tons of pig iron in 1901, an increase over 1900 of 992,607 tons or 15.6 per cent, or reckoning back a period of five years to 1896, an increase of 3,337,945 tons or 82.9 per cent.

The capital invested to bring about this production was $152,075,575, an increase of $79,886,791 over 1900 or 110.6 per cent. This 1901 capital is an increase of fully three times the capital invested five years ago.

The market or realized value of the production for 1901 was $106,883,000 as against $105,449,923 in 1900, an increase of 1.4 per cent, and as against $45,172,039 in 1896, an increase of 136.7 per cent.

The average realized value per ton was $14.52 in 1901, a decrease from 1900 of $2.03, but an increase over 1896 of $3.31.

The aggregate wages paid out, $8,646,479, was an increase over 1900 of $146,285, or 1.7 per cent, and an increase over 1896 of $4,057,314, or 88.4 per cent.

The average yearly earnings for all wage earners, skilled and unskilled, $586.24, was an increase over 1900 of $47.74 or 8.9 per cent., and an increase over 1896 of $189.94 or 47.9 per cent.

The average daily wage, $1.85, was an increase over 1900 of eighteen cents, and an increase over 1896 of forty-eight cents or 35 per cent.

The number of wage earners employed 14,749 was a decrease from 1900 of 1,036 or 6.6 per cent, but an increase over 1896 of 3,169, or 27.4 per cent.

The table of production by counties shows that Allegheny county produced 50 per cent of the entire production of the State, and that practically three-fourths of the production came from west of the Allegheny mountains.

STEEL.

The production of 7,959,720 gross tons of all kinds of steel for 1901 was an increase over 1900 of 1,702,945 tons or 27.2 per cent, and an increase over 1896 of 4,614,191 tons or 137.9 per cent. The 4,319,144 tons of bessemer was an increase over 1900 of 830,575 tons or 23.8 per cent, and an increase over 1896 of 2,026,330 tons or 88.4 per cent. The 3,554,828 tons of open hearth was an increase over 1900 of 851,860 tons or 31.5 per cent, and an increase over 1896 of 2,545,220 tons or 252 per cent. The 85,748 tons of crucible and other processes was an increase over 1900 of 21,248 tons or 32.9 per cent, and an increase over 1896 of 42,641 tons or 98.9 per cent.

The table of production by counties shows that Allegheny county produced 64.6 per cent of the entire production of steel in the State, and that over 80 per cent came from counties west of the Allegheny mountains.

ROLLED IRON AND STEEL.

The capital invested of $232,108,715 includes the capital invested in the production of steel by the rolling mills, and is an increase over 1900 of $48,102,040 or 26.1 per cent, and an increase over 1896 of $108,157,398 or 87.2 per cent.

The production of 1,406,532 gross tons of rails in 1901 was an increase over 1900 of 208,434 tons or 17.4 per cent, and an increase over 1896 of 731,881 tons or 108.5 per cent. The production of 1,590,502 gross tons of plates and sheets includes black plate and other sheets made by the tin works. It is a decrease from the production of 1900 of 7,532 tons or 0.5 per cent, but an increase over the production of 1896 of 959,641 tons or 152.1 per cent. The production of cut nails and cut spikes, as will be seen, was 37,349 gross tons as against 24,289 tons in 1900 an increase of 13,060 tons or 53.3 per cent, and an increase over 1896 of 8,509 tons or 29.5 per cent. Comparison of the production of structural shapes, 916,013 gross tons, cannot be made for the reason that the Bureau has not made a separation of this form of rolled production in other years. The production of 4,717,941 gross tons of Other Rolled Products includes bar, rods and other forms of rolled production than that above enumerated, and billets sheet bar, tin plate bar, etc., not worked into a further finished form by the mills reporting. For the purpose of comparison with the so-called "Finished Form" of other years, eliminate 1,665,360 tons billets, etc., and a production of 7,002,977 gross tons is left for iron and steel rolled into finished form, an increase over 1900 of 1,065,943 gross tons, or 17.9 per cent, and an increase over 1896 of 3,658,447 gross tons, or 109 per cent.

The value of this entire production as given, $298,284,259, does not include the production of the tin plate works. While neither the figures given on page 612, as the production of rolled iron and steel for the State nor its value are free from twice counting, yet all other presentations relative thereto, such as capital invested, persons employed and wages, are true as relative to the production of rolled iron and steel of the State. The difficulty lies in a partial twice counting of the production of this class of billets, etc., and a twice counting of the corresponding value. While this form of production has passed through an initiatory process of rolling, if not further treated by the mills reporting, it goes to other mills and is by them reported to us in a more finished form. If these billets, etc., have been worked into a further finished form by the mills reporting, they are not considered in our presentation of Rolled Iron and Steel, either as to tonnage or value, but to show a completeness as to each mill reporting, the surplus of billets, etc., that is to say, the tonnage of this form of rolled production sold on the market, is considered as a part of the production and classified in our presentation with other products. However, it will be readily seen that to the extent that these billets, etc., were made into a further finished form by other mills of Pennsylvania and reported to us as rails, sheets, finished bar shapes, etc., to count their tonnage and value as originally reported would be to that extent not only to twice count tonnage, but to twice count values. To avoid this difficulty, an effort was made to get from each mill reporting a separation of the tonnage of billets, etc., sold to Pennsylvania mills, with corresponding value, from that sold to mills outside of the State, and while this separation could not be obtained with entire accuracy, every effort was made by the mills reporting to give us the most intelligent figures possible, and the result is that 1,425,833 tons of billets, etc., included in the tonnage of other rolled products should be eliminated, leaving for this class of rolled iron and steel, 3,292,108 gross tons, and leaving the actual rolled production of the State for 1901, 7,242,504 gross tons, instead of 8,668,337 as reported by the mills, and as tabulated in the presentation of rolled iron and steel, page 612. For this elimination $30,589,076, should be deducted from the $298,284,259 aggregate value as shown on the same page of this report, leaving a net value of $267,695,183 for Pennsylvania's production of rolled iron and steel.

The number of workmen employed in 1901 was 86,086; aggregate of wages paid $53,334,787.

The yearly earnings skilled and unskilled were $619.55, an increase over 1900 of $45.58 or 7.9 per cent, and an increase over 1896 of $174.66 or 39.3 per cent.

The average daily wage was $2.21, an increase over 1900 of ten cents or 4.7 per cent, and an increase over 1896 of forty-four cents or 24.8 per cent.

The table of production shows that Allegheny county produced 58.8 per cent of the entire production of rolled iron and steel of the State, and that less than 25 per cent came from counties east of the Allegheny mountains.

TIN PLATE.

The capital invested in the tin plate works manufacturing their own black plate was $10,525,000 for 1901, an increase over 1900 of $753,112 or 7.8 per cent, and an increase over 1896 of $6,897,725 or 190.2 per cent.

The production of 435,628,000 pounds of black plate for tinning was an increase over 1900 of 123,626,000 pounds or 39.6 per cent, and an increase over 1896 of 277,321,510 pounds or 175.2 per cent. The dipping works combined was 421,640,000 pounds, an increase over 1900 of 123,786,000 pounds or 41.6 per cent, and an increase over 1896 of 282,051,297 pounds or 202.1 per cent.

The average value per base box of 100 pounds of the tin and terne plate produced by the black plate tin works was $4.00 and the average value per base box of 100 pounds of the tin and terne plate produced by the dipping works was $5.72.

The 8,188 workmen employed in the black plate tin works were an increase over 1900 of 794 persons or 10.8 per cent, and an increase over 1896 of 4,994 persons or 156.3 per cent.

The average yearly earnings for the skilled and unskilled of $561.00 was an increase over 1900 of $84.00 or 17.6 per cent, and an increase over 1896 of $104.46 or 22.9 per cent.

It will be seen that the average daily wage of all wage earners, skilled and unskilled, in the black plate tin works was $2.46, an increase over 1900 of six cents, and an increase over 1896 of sixty-six cents or 36.7 per cent.

From the table of production by counties it will be seen that Lawrence county produced 44.37 per cent of the entire production of black plate for tinning of the State; that Westmoreland follows with 23.96 per cent, Allegheny with 11.16 per cent, and that Mercer takes her place for the first time in the column of black plate producing counties with 6.97 per cent of the entire production. It will be observed that no counties, except Philadelphia and Allegheny, have dipping works, that is, works where tin and terne plate are made entirely from purchased black plate. Of this production Philadelphia had 15,693 net tons and Allegheny 6,412 net tons.

In the table of production of tin and terne plate by counties Lawrence heads the list as in the production of black plate.

CEMENT.

The presentation of the manufacture of cement in Pennsylvania for 1901 follows that of tin plate on page 626. The illustrations contained in the report cover not only all modern machinery, but give some idea of what is comprehended by a modern cement works.

It will be seen that fourteen firms or ownerships had active cement plants in 1901, with a capital invested of $19,271,981, and a total production, based on barrels, of Portland, Natural and Improved cement, of 7,955,669, the market or realized value of which was $7,334,891.

The number of workmen employed was 5,080. The aggregate wages paid to these workmen was $2,212,457, an average yearly earnings of $435.52 and an average daily wage of $1.34.

The importance of this large production of cement in Pennsylvania should be appreciated, especially the large production of Portland cement, when it is taken into consideration that Portland cement is the main ingredient in the construction of the heaviest masonry of the world. As set forth by Mr. Lesley in his contribution on the cement industry, it will be seen that in the early seventies the first effort at making Portland cement in Pennsylvania was made by Mr. David O. Saylor at Allentown, and that he was successful. In fact, this was practically the first effort, at least the first successful effort at making Portland cement in the United States. The second works established in Pennsylvania were at Wampum, Lawrence county, in 1875, by Mr. W. P. Shinn. The railroads had early learned the importance of cement in masonry, Mr. Shinn being connected with the Pittsburg, Fort Wayne and Chicago Railway. These works continued to operate under different ownerships until during the year 1901 they were rebuilt with all up-to-date machinery and appliances. Mr. Saylor's venture, the eastern counties having the rock necessary to the successful production of Portland cement, laid the foundation for the large works now located in that section.

Twenty years ago the production of Portland cement in the United States was only 85,000 barrels. In 1901 it was 12,711,225 barrels, of which Pennsylvania produced over 54 per cent. A study of the production, importation and consumption chart on page seventy-nine will not only be of great interest, but will be, to many, a very great surprise, as it will be seen from the chart that in 1901 the production of Portland cement in the United States almost equalled the consumption. And it certainly must be gratifying to realize and know that American Portland Cement is fully the equal of foreign Portland, and that the American consumer so far appreciates this equality as to practically use it to the exclusion of the imported. Attention is called to the active Cement works for 1901 in Pennsylvania, with their location and addresses, page 626.

TANNERIES.

The next presentation is that of tanning in Pennsylvania. It will be observed that in 1901 Pennsylvania had 200 active tanneries engaged in the business of tanning, currying and finishing leather; that the capital invested in this industry was $64,582,517, with a value of production of $69,202,533, which does not include any of the by-products. The number of workmen employed was 15,565, of which 14,307 were males, 545 females and 713 children.

The aggregate of wages paid out was $6,580,552. The average yearly earnings of the males was $440.65, of the females $259.13, of the children $189.23, with an average daily wage for the males of $1.47, females eighty-seven cents and children sixty-three cents.

The number of ownerships, by reason of the combination of capital, and the retirement from business of the smaller tanneries, has been materially reduced in the past ten years, although the production has not been so effected. We submit the following table of some of the leading productions with corresponding values, for 1901 as com-compared with that of 1892.

Kinds.	1901.		1892.	
	Production.	Value.	Production.	Value.
Oak leather,	434,630	$1,653,466	409,817	$1,730,461
Hemlock,	7,708,431	22,837,428	6,488,026	19,164,969
Union,	2,900,437	12,220,732	2,747,684	9,792,844
Upper,	397,855	1,012,181	612,860	1,793,139
Kip and calf,	354,023	685,553	541,548	951,957
Goat skins,	28,492,260	25,090,390	16,442,641	12,813,145
Sheep skins,	778,773	346,990	1,113,105	560,180
Splits,	1,267,902	1.203,316	207,000	137,700
Harness,	364,158	2,137,819	444,372	2,099,803

While the two presentations vary somewhat as to increases and decreases, the valuation of the total output for 1901 is clearly set forth as $13,713,555 in excess of that of 1892 or an increase of 24.8 per cent. The marked change is the increase in the tanning of goat skins, the number tanned in 1901 being 28,492,260 as against 16,443,641 tanned in 1892, an increase of 12,048,619 skins or 73.3 per cent, all of which increase belongs to the city of Philadelphia, as practically no goat skins are tanned in Pennsylvania outside of that city.

BOOTS AND SHOES.

The presentation of this industry on page 628 is the result of a close canvas, and may be relied upon in all its details. The directory which follows, is complete and correct as representing the factories active for any part of 1901. It is creditable to the industry in Pennsylvania that with 120 active factories in 1901, against 146 in 1900, as reported by the Federal Census, and a reduction of capital from $6,860,480 to $5,336,077, that the number of wage earners employed was increased 198. The number employed in 1901 being 9,342, as against 9,144 in 1900, and that the production was practically the same, that of 1900 being 12,387,168 pairs, as against 12,478,056 pairs in 1901, a falling off of only 90,888 pairs, which slight difference as relative to the production per employe, might readily be accounted for by as slight an increase in the quality of the goods produced. The difference in values would indicate that such conditions existed as the value of the production for 1901 was $13,602,712, as against $13,235,933 in 1900, an increase of $366,779. This would seem the most reasonable explanation, since the increase in number of employed was largely in the number of males over 16, and not in the cheaper labor. The number of males over 16 reported by the Federal

Census was 5,291, our presentation for 1901. 5,438, an increase of 147. The increase in females over 16 was only 30. The Federal Census being 3,239, as against our presentation of 3,269, and there was but an increase of 21 in the number of children under 16, the total census showing 614, as against our presentation of 625.

The change in capital as relative to the value of the production places Pennsylvania in quite a different position in the comparison by States of the average amount of capital required for a product valued at $100. than has heretofore been assigned her, dropping from 51.83, as set forth in the Census Bulletin No. 221, to 39.23 per cent.

It might be well to state that capital as set forth in the Bureau's presentation, is the capital invested in realty, buildings, machinery, tools, and all implements used in manufacturing, together with capital necessary to the conduct of the business.

It will be seen that the average earnings of males over 16 for the 280 days of operation, was $403.11; females, $241.44, and children under 16, $123.18, and that the avarage daily wage for males over 16 was $1.44; females, 86 cents, and children under 16, 44 cents.

RUBBER BOOTS AND SHOES.

Pennsylvania has but two rubber boot and shoe factories. These had a capital invested of $800,000 and employed 621 males, 412 females and thirty children.

The average yearly earnings of the males was $377.30, of the females $220.35 and of the children $105.33. Average daily wage, males, $1.32, females seventy-seven cents and children thirty-seven cents.

The value of the total production was $1,697,817.

AVERAGE DAILY WAGE.

On page 630 will be found a presentation of average daily wage as deducted from this report. It will be noticed that the presentation closes with the many industries that give employment, if not entirely to women and children, to a percentage so large as to make them of no value whatever as affecting the daily wage of males.

COMMUNICATIONS.

Letters from manufacturers in reply to a communication from the Bureau touching upon a question of most vital interest to manufacturers, the labor question, constitute the last presentation of the report. The expressions are quite varied, and many of the letters are full of interest and well worth reading.

A few of the tanning industry letters take up the question of the depletion of bark, with suggestive thoughts.

THE FEDERAL CENSUS.

In connection with Pennsylvania's industrial condition we submit herewith an advance bulletin of the Federal Census Department for 1900 of Pennsylvania manufactures, followed by an industrial census of twenty cities of the State, showing number of establishments, capital invested, wage earners, aggregate wages, value, etc., together with deductions of the Bureau.

PENNSYLVANIA.

	1900.	1890.	Per cent of increase.
Number of establishments,	52,185	39,339	32.7
Capital,	$1,551,548,712	$991,243,115	56.5
Wage-earners, average number,	733,834	570,393	28.7
Total wages,	$332,072,670	$263,375,215	26.1
Miscellaneous expenses,	134,344,269	74,841,458	79.5
Cost of materials used,	1,042,561,628	773,734,637	34.7
Value of products, including custom work and repairing,	1,835,104,431	1,331,794,901	37.8

ALLEGHENY.

	1900.	1890.	Per cent of increase.
Number of establishments,	894	675	32.4
Capital,	$50,163,003	$22,253,243	125.4
Wage-earners, average number,	20,828	11,857	75.7
Total wages,	$10,367,502	$5,916,525	75.2
Miscellaneous expenses,	5,120,624	1,728,571	196.2
Cost of materials used,	29,481,871	14,231,758	107.2
Value of products, including custom work and repairing,	54,159,792	26,878,979	101.5

ALLENTOWN.

	1900.	1890.	Per cent of increase.
Number of establishments,	491	382	28.5
Capital,	$11,996,971	$6,977,091	71.9
Wage-earners, average number,	8,447	5,293	59.6
Total wages,	$3,150,970	$1,910,882	64.9
Miscellaneous expenses,	1,310,643	532,875	146.0
Cost of materials used,	9,846,047	5,102,911	92.9
Value of products, including custom work and repairing,	16,947,722	8,876,565	90.9

FEDERAL CENSUS—Continued.

ALTOONA.

	1900.	1890.	Per cent of increase.
Number of establishments,	229	208	10.1
Capital,	$7,298,819	$7,955,423	*8.3
Wage-earners, average number,	7,638	6,216	22.9
Total wages,	$4,533,828	$3,440,298	31.8
Miscellaneous expenses,	296,551	241,121	23.0
Cost of materials used,	7,268,488	6,133,222	18.5
Value of products, including custom work and repairing.	12,877,528	10,497,019	22.7

CHESTER.

	1900.	1890.	Per cent of increase.
Number of establishments,	315	201	56.7
Capital,	$18,977,710	$9,397,033	102.0
Wage-earners, average number,	7,682	6,559	17.1
Total wages,	$3,462,196	$2,807,341	23.3
Miscellaneous expenses,	1,222,400	608,831	100.8
Cost of materials used,	9,261,886	6,844,825	35.3
Value of products, including custom work and repairing,	16,421,725	11,864,899	38.4

*Decrease.

ERIE.

	1900.	1890.	Per cent of increase.
Number of establishments,	644	236	172.9
Capital,	$20,418,016	$12,812,594	59.4
Wage-earners, average number,	9,339	6,463	44.5
Total wages,	$4,574,625	$3,248,366	40.8
Miscellaneous expenses,	1,197,411	718,157	66.7
Cost of materials used,	9,107,305	6,145,680	48.2
Value of products, including custom work and repairing.	19,053,202	12,765,768	49.3

HARRISBURG.

	1900.	1890.	Per cent of increase.
Number of establishments,	446	475	*6.1
Capital,	$8,749,516	$6,716,074	30.3
Wage-earners, average number,	7,362	6,314	16.6
Total wages,	$2,949,544	$2,947,291	0.1
Miscellaneous expenses,	646,950	428,757	50.9
Cost of materials used,	9,402,516	5,432,303	73.1
Value of products, including custom work and repairing.	16,064,597	10,538,444	52.4

FEDERAL CENSUS—Continued.

JOHNSTOWN.

	1900.	1890.	Per cent of increase.
Number of establishments,	248	113	119.5
Capital,	$16,940,450	$13,280,296	27.6
Wage-earners, average number,	6,116	5,369	13.9
Total wages,	$3,213,189	$2,879,569	11.6
Miscellaneous expenses,	1.922,080	789,343	143.5
Cost of materials used,	14,445,126	13,137,331	10.0
Value of products, including custom work and repairing,	22,559,890	18,422,989	22.5

LANCASTER.

	1900.	1890.	Per cent of increase.
Number of establishments,	738	599	23.2
Capital,	$10,803,464	$7,691,314	40.5
Wage-earners, average number,	9,349	7,330	27.5
Total wages,	$3,323,748	$2,219,917	49.7
Miscellaneous expenses,	1,193,997	691,291	72.7
Cost of materials used,	8,342,769	6,306,495	32.3
Value of products, including custom work and repairing,	16,370,281	11,361,535	44.1

*Decrease.

McKEESPORT.

	1900.	1890.	Per cent of increase.
Number of establishments,	180	118	52.5
Capital,	$17,876,016	$10,979.812	62.8
Wage-earners, average number,	7,605	6,078	25.1
Total wages,	$4,370,381	$3,189,558	37.0
Miscellaneous expenses,	428,226	737,562	*41.9
Cost of materials used,	22,309,161	10,617,338	110.1
Value of products, including custom work and repairing,	37,074,136	17,432,721	112.7

PHILADELPHIA.

	1900.	1890.	Per cent of increase.
Number of establishments,	15,888	18,166	*12.5
Capital,	$476,591,792	$375,249,715	27.0
Wage-earners, average number,	246,603	234,647	5.1
Total wages,	$111,902,811	$113,306.173	*1.2
Miscellaneous expenses,	55,578,272	39,615,476	40.3
Cost of materials used,	326,918,805	311,645,804	4.9
Value of products, including custom work and repairing,	603,587,392	577,234,446	4.6

FEDERAL CENSUS—Continued.

PITTSBURG.

	1900.	1890.	Per cent of increase.
Number of establishments,	1,937	1,420	36.4
Capital,	$193,122,400	$108,368,838	78.2
Wage-earners, average number,	69,953	52,963	32.1
Total wages,	$36,669,563	$29,889,486	22.7
Miscellaneous expenses,	15,292,662	7,561,199	102.3
Cost of materials used,	116,830,084	69,892,195	67.2
Value of products, including custom work and repairing.	203,238,426	126,859,657	60.2

READING.

	1900.	1890.	Per cent of increase.
Number of establishments,	843	435	93.8
Capital,	$27,975,628	$14,083,374	98.6
Wage-earners, average number,	19,165	12,211	56.9
Total wages,	$7,544,950	$4,780.470	57.8
Miscellaneous expenses,	5,085,456	1,042,366	387.9
Cost of materials used,	19,089.332	12,009.332	59.0
Value of products, including custom work and repairing,	36,902,511	20,855,165	76.9

*Decrease.

SCRANTON.

	1900.	1890.	Per cent of increase.
Number of establishments,	710	177	301.1
Capital,	$19,954.525	$16,237,271	22.9
Wage-earners, average number,	12,669	8,825	43.6
Total wages,	$5,191.522	$3,928,834	32.1
Miscellaneous expenses,	1,857,881	874,621	112.4
Cost of materials used,	18,411,022	16,922,753	8.8
Value of products, including custom work and repairing,	27,646,418	24,341,745	13.6

WILKES-BARRE.

	1900.	1890.	Per cent of increase.
Number of establishments,	438	270	62.2
Capital,	$10,501.537	$5,598.139	87.6
Wage-earners, average number,	5,977	4,141	44.3
Total wages,	$2,286,676	$1,808,226	26.5
Miscellaneous expenses,	1,142.358	578,640	97.4
Cost of materials used,	5,167.777	4,026,579	28.3
Value of products, including custom work and repairing,	10,758,348	7,746,371	38.9

FEDERAL CENSUS—Continued.

WILLIAMSPORT.

	1900.	1890.	Per cent of increase.
Number of establishments,	396	302	31.1
Capital,	$9,863,811	$12,335,423	*20.0
Wage-earners, average number,	5,595	5,653	*1.0
Total wages,	$2,065,930	$2,271,531	*9.1
Miscellaneous expenses,	517,059	626,646	*17.5
Cost of materials used,	6,420,337	5,919,284	8.5
Value of products, including custom work and repairing,	11,199,600	11,107,037	0.8

YORK.

	1900.	1890.	Per cent of increase.
Number of establishments,	464	350	32.6
Capital,	$9,640,784	$3,842,453	150.9
Wage-earners, average number,	7,785	3,669	112.2
Total wages,	$2,679,175	$1,320,418	102.9
Miscellaneous expenses,	798,453	358,635	122.6
Cost of materials used,	6,078,070	3,170,840	91.7
Value of products, including custom work and repairing,	11,961,706	5,968,223	100.4

*Decrease.

EASTON.

	1900.	*1890
Number of establishments,	285	....
Capital,	$4,829,879	....
Wage-earners, average number,	3,912	....
Total wages,	$1,516,525	....
Miscellaneous expenses,	485,029	....
Cost of materials used,	3,794,496	....
Value of products, including custom work and repairing,	6,746,078	....

NEW CASTLE.

	1900.	*1890.
Number of establishments,	215	....
Capital,	$13,308,220	....
Wage-earners, average number,	4,992	....
Total wages,	$3,226,669	....
Miscellaneous expenses,	491,336	....
Cost of materials used,	13,646,648	....
Value of products, including custom work and repairing,	21,179,072	....

FEDERAL CENSUS—Concluded.

NORRISTOWN.

	1900.	*1890.
Number of establishments,	210	....
Capital,	$4,069,449	....
Wage-earners, average number,	3,429	....
Total wages,	$1,168,942	....
Miscellaneous expenses,	418,854	....
Cost of materials used,	2,467.861	....
Value of products, including custom work and repairing,	4,821,745	....

SHENANDOAH.

	1900.	*1890.
Number of establishments,	78	....
Capital,	$374,057	....
Wage-earners, average number,	210	....
Total wages,	$88,555	....
Miscellaneous expenses,	96,929	....
Cost of materials used,	180,224	....
Value of products, including custom work and repairing,	479,336	....

*Not reported separately in 1890.

AVERAGE YEARLY EARNINGS OF SKILLED AND UNSKILLED WAGE-EARNERS IN PENNSYLVANIA AND IN 20 CITIES OF THE STATE FOR 1900 AS DEDUCTED FROM THE FOREGOING FEDERAL CENSUS SHEETS.

New Castle,	$646 37
Altoona,	593 59
McKeesport,	574 67
Johnstown,	525 37
Pittsburg,	524 20
Allegheny,	497 77
Erie,	489 84
Philadelphia,	453 77
Chester,	450 69
Shenandoah,	421 69
Scranton,	409 78
Harrisburg,	400 64
Reading,	393 68
Easton,	387 66
Wilkes-Barre,	382 58
Allentown,	373 03
Williamsport,	369 25
Lancaster,	355 52
York,	344 15
Norristown,	340 89
Average of the State,	452 50

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REPORT

OF THE

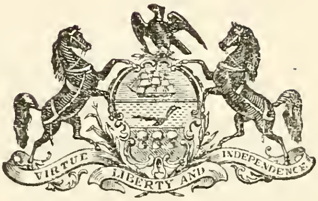
BUREAU OF MINES

OF THE

Department of Internal Affairs of Pennsylvania.

1901.

WM. STANLEY RAY,
STATE PRINTER OF PENNSYLVANIA.
1902.


VIRTUE
LIBERTY AND
INDEPENDENCE

LETTER OF TRANSMITTAL.

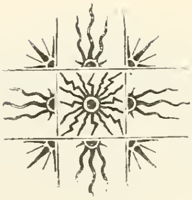
Bureau of Mines,
April 1, 1902.

Hon. James W. Latta, Secretary of Internal Affairs:

Sir: In accordance with Section 5 of an act establishing a Bureau of Mines in the Department of Internal Affairs, approved July 15, 1897, I have the honor to herewith submit the Report of the Bureau of Mines for the year ending December 31, 1901, together with the reports of the Anthracite and Bituminous Inspectors.

Very respectfully,

JAMES E. RODERICK,
Chief of Bureau of Mines.



REPORT

OF THE

BUREAU OF MINES.

COMMUNICATION.

Department of Internal Affairs,
Harrisburg, April 5, 1902.

To His Excellency, William A. Stone, Governor of Pennsylvania:

Sir: In compliance with the requirements of the act of June 2, 1891, and that of May 15, 1893, relative to the Mine Inspectors' Reports of the Anthracite and Bituminous coal regions, I have the honor to present to you for transmission to the General Assembly the Report of the Bureau of Mines for the year 1901.

Very Respectfully,
JAMES W. LATTA,
Secretary of Internal Affairs.

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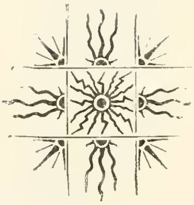
LAWS RELATING

TO

COAL MINING.



Anthracite Mining Laws of Pennsylvania.

LAWS RELATING TO COAL MINING.

AN ACT

To provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania and for the protection and preservation of property connected therewith.

ARTICLE I.

Section 1. Be it enacted, &c., That this act shall apply to every anthracite coal mine or colliery in the Commonwealth, provided the said mine or colliery employs more than ten (10) persons.

ARTICLE II.

Inspectors and Inspection Districts.

Section 1. The counties of Susquehanna, Wayne, Luzerne, Lackawanna, Carbon, Schuylkill, Northumberland, Columbia, Lebanon and Dauphin, or so much of them as may be included under the provisions of this act, shall be divided into eight (8) inspection districts as follows:

Section 2. First. All that portion of the Lackawanna coal field lying northeast of East and West Market streets in the city of Scranton, and of Slocum and Drinker streets in the borough of Dunmore, including the coal fields of Susquehanna and Wayne counties.

Second. That portion of the Lackawanna coal field in Lackawanna county lying southwest of East and West Market streets in the city of Scranton, and west of Slocum and Drinker streets in the borough of Dunmore.

Third. That portion of the Wyoming coal field situated in Luzerne county, east of and including Plains and Kingston townships.

Fourth. The remaining portion of the Wyoming coal field west of Plains and Kingston townships, including the city of Wilkes-Barre and the boroughs of Kingston and Edwardsville.

Fifth. That part of Luzerne county lying south of the Wyoming coal field together with Carbon county.

Sixth. That part of the Schuylkill coal field in Schuylkill county lying north of the Broad Mountain and east of a meridian line through the centre of the borough of Girardville.

Seventh. That part of the Schuylkill coal field in Schuylkill county lying north of the Broad Mountain and west of a meridian line through the centre of the borough of Girardville, together with Columbia, Northumberland and Dauphin counties.

Eighth. All that part of the Schuylkill coal field in Schuylkill county lying south of the Mahanoy Valley, and the county of Lebanon.

Section 3. In order to fill any vacancy that may occur in the office of Inspector of Mines by reason of expiration of term, resignation, removal for cause or from any other reason whatever, the judges of the court of Lackawanna county shall appoint an examining board for the counties of Susquehanna, Wayne and Lackawanna, and the judges of the court of Luzerne county shall appoint an examining board for the counties of Sullivan, Carbon and Luzerne, and the judges of Schuylkill county shall appoint an examining board for the counties of Schuylkill, Northumberland, Lebanon, Columbia and Dauphin.

Section 4. The said Board of Examiners shall be composed of three reputable coal miners in actual practice and two reputable mining engineers, all of whom shall be appointed at the first term of court in each year, to hold their places during the year. Any vacancies that may occur in the Board of Examiners shall be filled by the court as they occur. The said Board of Examiners shall be permitted to engage the services of a clerk, and they, together with the clerk, shall each receive the sum of five dollars per day for every day they are actually engaged in the discharge of their duties under this appointment, and mileage at the rate of six cents per mile from their home to the place of meeting and return by the nearest practicable railway route.

Section 5. Whenever candidates for the office of inspector are to be examined, the said examiner shall give public notice of the fact in not more than five papers published in the inspection district and at least two weeks before the meeting, specifying the time and place where such meeting shall be held. The said examiners shall be sworn to a faithful discharge of their duties, and four of them shall agree in their recommendation of all candidates to the Governor who have answered ninety per centum of the questions; the names of the applicants, the questions asked and answered thereto shall be sent to the Secretary of the Commonwealth, and published in at least two local papers, daily or weekly, and shall recommend only such applicants as they find qualified for the office.

Should the Board of Examiners not be able to agree in their selection and recommendation of a candidate, the judges of the court of common pleas shall dissolve the said board and appoint a new board of like qualifications and powers.

Upon the recommendation of the Board of Examiners as aforesaid, the Governor shall appoint such person or persons to fill the office of inspector of mines under this act, and shall issue to him a commission for the term of five years, subject, however, to removal for neglect of duty or malfeasance in office as hereinafter provided for.

Section 6. The person so appointed must be a citizen of Pennsylvania and shall have attained the age of thirty years. He must have a knowledge of the different systems of working coal mines, and he must produce satisfactory evidence to the Board of Examiners of having had at least five (5) years' practical experience in anthracite coal mines of Pennsylvania. He must have had experience in coal mines where noxious and explosive gases are evolved.

Before entering upon the duties of his office he shall take an oath or affirmation before an officer properly qualified to administer the same, that he will perform his duties with fidelity and impartiality; which oath or affirmation shall be filed in the office of the prothonotary of the county. He shall also provide himself with the most modern instruments and appliances for carrying out the intentions of this act.

Section 7. The salary of each of the said inspectors shall be three thousand dollars per annum, which salary, together with the expense incurred in carrying into effect the provisions of this act, shall be paid by the State Treasurer out of the Treasury of the Commonwealth upon the warrant of the Auditor General.

Section 8. In case the inspector becomes incapacitated to perform the duties of his office, for a longer period than two weeks, it shall be the duty of the judges of the court of common pleas to deputize some competent person recommended by the Board of Examiners to fill the office of inspector until the said inspector shall be able to fulfill the duties of his office and the person so appointed shall be paid in the same manner as is provided for the Inspector of Mines.

Section 9. Each of the said inspectors shall reside in the district for which he is appointed, and shall give his whole time and attention to the duties of the office. He shall examine all the collieries in his district as often as his duties will permit or as often as the exigencies of the case or the condition of the mines require it; see that every necessary precaution is taken to secure the safety of the workmen and that the provisions of this act are observed and obeyed; attend every inquest held by the coroner, or his deputy, upon the bodies of persons killed in or about the collieries in his district; visit the scene of the accident for the purpose of making an examination into the particulars of the same whenever loss of life or serious personal injury occurs as elsewhere herein provided for, and make an annual report of his proceedings to the Secretary of Internal Affairs of the Commonwealth at the close of every year, enumerating all the accidents in and about the collieries of his district, marking in tabular form those accidents causing death or serious personal injury, the condition of the workings of the said mines with regard to the safety of the workmen therein and the ventilation thereof, and the result of his labors generally shall be fully set forth.

Section 10. The Board of Examiners, each for its respective district as hereinbefore provided for, in order to divide more equitably among the several mine inspectors the labor to be performed and the territory to be covered by them in the performance of the duties of the office, may, at any time when they shall deem it desirable or necessary, readjust the several districts by the creation of new boundary lines, thereby adding to or taking from, as the case may be, the districts as at present bounded and described, if the court having jurisdiction approve the same.

And in case it shall be deemed desirable or necessary to readjust any contiguous district, comprised by more than one judicial district, by the creation of new boundary lines, then in such case the examining boards of the territory affected or requiring such adjustment, shall, in joint session, make such change or readjustment as they shall jointly agree upon, if the nearest court having jurisdiction to the territory affected to whom the said joint examining boards shall submit the matter, shall approve the same.

Section 11. The mine inspector shall have the right, and it is hereby made his duty to enter, inspect and examine any mine or colliery in his district and the workings and machinery belonging thereto, at all reasonable times, either by day or night, but not so as to impede or obstruct the working of the colliery, and shall have power to take one or more of his fellow inspectors into or around any mine or colliery in the district for which he is appointed, for the purpose of consultation or examination.

He shall also have the right and it is hereby made his duty, to make inquiry into the condition of such mine or colliery workings, machinery, ventilation, drainage, method of lighting or using lights and into all matters and things connected with or relating to, as well as to make suggestions providing for the health and safety of persons employed in or about the same, and especially to make inquiry whether the provisions of this act have been complied with.

The owner, operator or superintendent of such mine or colliery is hereby required to furnish the means necessary for such entry, inspection, examination, inquiry and exit.

The inspector shall make a record of the visit, noting the time and material circumstances of the inspection.

Section 12. No person who shall act or practice as a land agent or as the manager or agent of any coal mine or colliery, who is pecuniarily interested in operating any coal mine or colliery in his district, shall, at the same time, hold the office of inspector of mines under this act.

Section 13. Whenever a petition signed by fifteen or more reputable coal operators or miners, or both, setting forth that any inspector of mines neglects his duties, or is incompetent, or is guilty of malfeasance in office, it shall be the duty of the court of common pleas of the proper county to issue a citation in the name of the Commonwealth to the said inspector to appear at not less than five days' notice, on a day fixed, before said court and the court shall then proceed to inquire into and investigate the allegations of the petitioners. If the court find that said inspector is neglectful of his duties or that he is incompetent to perform the duties of the office, for any cause that existed previous to his appointment or that has arisen since his appointment, or that he is guilty of malfeasance in office, the court shall certify the same to the Governor of the Commonwealth, who shall declare the office of inspector for the district vacant and proceed, in compliance with the provisions of this act, to appoint a properly qualified person to fill the office.

The cost of said investigation shall be borne by the removed inspector; but if the allegations in the petition are not sustained the costs shall be paid by the petitioners.

Section 14. The maps and plans of the mines and the records thereof, together with all the papers relating thereto, shall be kept by the inspector, properly arranged and preserved, in a convenient place in the district for which each inspector has been appointed, and shall be transferred by him with any other property of the Commonwealth that may be in his possession, to his successor in office.

Section 15. The persons who, at the time this act goes into effect, are acting as inspectors of mines under the acts hereby repealed shall continue to act in the same manner as if they had been appointed under this act, and until the term for which they were appointed has expired.

ARTICLE III.

Surveys, Maps and Plans.

Section 1. The owner, operator or superintendent of every coal mine or colliery shall make, or cause to be made, an accurate map or plan of the workings or excavations of such coal mine or colliery, on a scale of one hundred feet to the inch, which map or plan shall exhibit the workings or excavations in each and every seam of coal and the tunnels and passages connecting with such workings or excavations. It shall state in degrees the general inclination of the strata with any material deflection therein in said workings or excavations, and shall also state the tidal elevations of the bottom of each and every shaft, slope, tunnel and gangway, and of any other point in the mine or on the surface where such elevation shall be deemed necessary by the inspector. The map or plan shall show the number of the last survey station and date of each survey on the gangways or the most advanced workings. It shall also accurately show the boundary lines of the lands of the said coal mine or colliery and the proximity of the workings thereto, and in case any mine contains any water dammed up in any part thereof, it shall be the duty of the owner, operator or superintendent to cause the true location of the said dam to be accurately marked on said map or plan, together with the tidal elevation, inclination of strata and area of said workings containing water, and whenever any workings or excavations is approaching the workings where such dam or water is contained or situated, the owner, operator or superintendent shall notify the inspector of the same without delay.

A true copy of which map or plan the said owner, operator or superintendent shall deposit with the inspector of mines for the district in which the said coal mine or colliery is situated, showing the workings of each seam, if so desired by the inspector, on a separate sheet of tracing muslin. One copy of the said map or plan shall be kept at the colliery.

Section 2. The said owner, operator or superintendent shall, as often as once in every six months place, or cause to be placed, on the said Inspector's map or plan of said coal mine or colliery, the plan of the extensions made in such coal mine or colliery during the preceding six months. The said extensions shall be placed on the inspector's map and the map returned to the inspector within two months from the date of the last survey.

Section 3. When any coal mine or colliery is worked out preparatory to being abandoned, or when any lift thereof is about to be abandoned, the owner, operator or superintendent of such coal mine or colliery shall have the maps or plans thereof extended to include all excavations, as far as practicable, and such portions thereof as have been worked to the boundary lines of adjoining properties; or any part or parts of the workings of which is intended to be allowed to fill with water, must be surveyed in duplicate and such surveys must practically agree, and certified copies be filed with the inspector of the district in which the mines are situated.

Section 4. Whenever the owner, operator or superintendent of any coal mine or colliery shall neglect or refuse, or from any cause not satisfactory to the inspector, shall fail, for a period of three months, to furnish to the inspector the map or plan of said colliery or of the extensions thereto, as provided for in this act, the inspector is hereby authorized to cause an accurate map or plan of such coal mine or colliery, to be made at the expense of the owner thereof, which cost shall be recoverable from said owner as other debts are by law recoverable.

Section 5. If the inspector finds or has reason to believe, that any map or plan of any coal mine or colliery, furnished under the provisions of this act, is materially inaccurate, it shall be his duty to make application to the court of common pleas of the county in which such colliery is situate for an order to have an accurate map or plan of said colliery prepared, and if such survey shall prove that the map furnished was materially inaccurate or imperfect, such owner, operator or superintendent shall be liable for the expense incurred in making the same.

Section 6. If it shall be found that the map or plan furnished by the owner, operator or superintendent was not materially inaccurate or imperfect, the Commonwealth shall be held liable for the expense incurred in making such test survey.

Section 7. If it shall be shown that the said owner, operator or superintendent has knowingly or designedly caused or allowed such map or plan, when furnished, to be incorrect or false, such owner, operator or superintendent thus offending, shall be guilty of a misdemeanor and upon conviction thereof, shall be punished by a fine not exceeding five hundred dollars or imprisonment not exceeding three months, at the discretion of the court.

Section 8. The maps or plans of the several coal mines or collieries in each district and which are placed in the custody of the inspector, shall be the property of the Commonwealth, and shall remain in the care of the inspector of the district in which the said collieries are situated to be transferred by him to his successor in office; and in no case shall a copy of the same be made without the consent of the owner, operator or superintendent.

Section 9. The inspector's map or plan of any particular colliery shall be open for inspection, in the presence of the inspector, to any miner or miners of that colliery, whenever said miner or miners shall have cause to fear that his or their working place or places is becoming dangerous, by reason of its proximity to other workings which may be supposed to contain water or dangerous gases. Said map shall also be open to the inspection and examination of any citizen interested, during business hours.

Section 10. It shall be obligatory on the owners of adjoining coal properties to leave, or cause to be left, a pillar of coal in each seam or vein of coal worked by them, along the line of adjoining property, of such width, that taken in connection with the pillar to be left by the adjoining property owner, will be a sufficient barrier for the safety of the employes of either mine in case the other should be abandoned and allowed to fill with water; such width of pillar to be determined by the engineers of the adjoining property owners together with the inspector of the district in which the mine is situated, and the surveys of the face of the workings along such pillar shall be made in duplicate and must practically agree. A copy of such duplicate surveys, certified to, must be filed with the owners of the adjoining properties and with the inspector of the district in which the mine or property is situated.

ARTICLE IV.

Shafts, Slopes, Openings and Outlets.

Section 1. It shall not be lawful for the owner, operator or superintendent of any mine to employ any person or persons in such mine or permit any person or persons to be in such mine for the purpose of working therein, unless they are in connection with every seam or stratum of coal; and from every lift thereof, worked in such mine, not less than two openings or outlets, separated by a strata of not less than sixty (60) feet in breadth underground, and one hundred and fifty (150) feet in breadth at the surface, at which openings or outlets safe and distinct means of ingress and egress are at all times available for the person or persons employed in the said mine, but it shall not be necessary for the said two openings to belong to the same mine if the persons employed therein have safe, ready and available means of ingress and egress by not less than two openings. This section shall not apply to opening a new mine or to opening any new lift of a mine while being worked for the purpose of making communication between said two outlets, so long as not more than twenty persons are employed at any one time in such mine or new lift of a mine; neither shall it apply to any mine or part of a mine in which the second outlet has been rendered unavailable by reason of the final robbing of pillars previous to abandonment, so long as not more than twenty persons are employed therein at any one time. The cage or cages and other means of egress shall, at all times, be available for the persons employed where there is no second outlet.

Section 2. The owner, operator or superintendent of any mine to which there is only one shaft, slope or outlet may petition the court of common pleas in and for the county in which such mine is situated, which said court is hereby empowered to act in the premises, setting forth that, in consequence of intervening lands between the working of his mine and the most practicable point, or the only practicable point, as the case may be, at which to make or bring to the surface from the working of his mine, he is unable to make an additional shaft, slope or outlet in accordance with the requirements of this act, whereupon the court may make an order of reference and appoint three disinterested persons, residents of the county, viewers, one or more of whom shall be a practical mining engineer, all of whom, after being sworn to a faithful discharge of their duties, shall view and examine the premises and determine as to whether the owner shall have the privilege of making an additional outlet through or upon any intervening lands, as the case may require, and report in writing to the court, which report shall be entered and filed of record. If the finding of the viewers, or any two of them, is in favor of the owner of such coal mine or colliery, he may make an additional shaft, slope or outlet under, through or upon intervening lands, as may be determined upon and provided for by the award. If the finding of the viewers is against the owner, or if no award be made by reason of any default or neglect on the part of the owner, he shall be bound to comply with the provisions of this act in the same manner as if this section had not been enacted. In case the said owner, operator or superintendent desires to, and claims that he ought to make an additional opening under, through or upon any adjoining or intervening lands, to meet the requirements of this act, for the ingress and egress of the men employed in his or their mine, he or they shall make a statement of the facts in the petition, with a survey, setting forth the point of commencement and the point of termination of the proposed outlet which he or they, their engineers, agents or employes may enter upon said intervening lands and survey and mark, as he or they shall find it proper to adopt for such additional outlet, doing as little damage as possible to the property explored; and the viewers shall state in their report what damage will be sustained by the owner or owners of the intervening lands by the opening, constructing and using of the outlet, and if the report is not appealed from, it shall be confirmed or rejected by said court as to right and justice shall appertain, and any further and all proceedings in relation thereto shall be in conformity with like proceedings as in the case of a lateral railroad across or under intervening lands, under the act in relation to lateral railroads, approved the fifth day of May, Anno Domini one thousand eight hundred and thirty-two, and the supplements thereto, so far as the provisions of the same are applicable hereto; and the notices to the owner of intervening lands, of the intention to apply for the privilege of making an outlet and meeting of the viewers shall be given, and the costs of the case shall be paid as provided in the said act of fifth day of May, Anno Domini one thousand eight hundred and thirty-two, and the supplements thereto.

Section 3. The escapements, shafts or slopes shall be fitted with safe and available appliances by which the persons employed in the mine may readily escape in case an accident occurs deranging the hoisting machinery at the main outlets.

Section 4. In slopes where the angle of inclination is fifteen degrees or less there must be provided a separate traveling way, which shall be maintained in a safe condition for travel and kept free from steam and dangerous gases.

Section 5. No inflammable structure, other than a frame to sustain pulleys or sheaves, shall be erected over the entrance of any opening connecting the surface with the underground workings of any mine, and no "breaker" or other inflammable structure for the preparation or storage of coal shall be erected nearer than two hundred (200) feet to any such opening, but this act shall not be construed to prohibit the erection of a fan drift for the purpose of ventilation, or of a trestle for the transportation of cars from any slope to such breaker or structure, neither shall it apply to any shaft or slope until the work of development and shipment of coal has commenced: Provided, That this section shall not apply to breakers that are now erected.

Section 6. The top of each shaft and also of each slope, if dangerous, or any intermediate lift thereof, shall be securely fenced off by railing or by vertical or flat gates.

Section 7. Every abandoned slope, shaft, air-hole and drift shall be properly fenced around or across its entrance.

Section 8. All underground entrances to any places not in actual course of working or extension shall be properly fenced across the whole width of such entrances, so as to prevent persons from inadvertently entering the same.

Section 9. The owner, operator or superintendent of any coal mine or colliery which is worked by shaft or slope, shall provide and maintain a suitable appliance by or through which conversation can be held by and between persons at the bottom and at the top of the shaft or slope, and also an efficient means of signaling from the bottom of such shaft or slope to the engineer in charge of the hoisting engine.

Section 10. Hand rails and efficient safety catches shall be attached to, and a sufficient cover overhead shall be provided on every cage used for lowering or hoisting persons in any shaft.

Section 11. Wherever practicable, every cage or gun-boat used for lowering or hoisting persons in any slope, shall be provided with a proper protector, so constructed that persons, while on such cage or gun-boat, shall not be struck by anything which may fall or roll down said slope.

Section 12. The main link of the chain connecting the rope to the cage, gun-boat or car in any shaft or slope, shall be made of the best quality of iron; bridle chains made of the same quality of iron shall be attached to the main link, rope or rope socket from the cross-head of the cage or gun-boat when persons are being lowered or hoisted thereon.

Section 13. The ropes, safety catches, links and chains shall be carefully examined every day they are used, by a competent person delegated for that purpose and any defects therein found, by which life or limb may be endangered, shall be immediately remedied.

Section 14. An efficient brake shall be attached to every drum that is used for lowering or raising persons or material in any mine.

Section 15. Flanges or horns of sufficient dimensions to prevent the rope from slipping off the said drum shall be provided and properly attached to the drum, and all machines used for lowering or hoisting persons in mines shall be provided with an indicator to show the position of the cage, car or gun-boat in the shaft or slope.

Section 16. Over all shafts which are being sunk or shall hereafter be sunk, a safe and substantial structure shall be erected to sustain the sheaves or pulleys, at a height of not less than twenty (20) feet above the tipping-place, and the top of such shaft shall be arranged in such manner that no material can fall into the shaft while the bucket is being emptied.

Section 17. The said structure shall be erected as soon as a substantial foundation is obtained, and in no case shall a shaft be sunk to a depth of more than fifty (50) feet without such structure.

Section 18. If provision is made to land the bucket upon truck, the said truck shall be constructed in such manner that material cannot fall into the shaft.

Section 19. All rock and coal from shafts as they are being sunk, shall not be raised except in a bucket or on a cage, and such bucket or cage must be connected to the rope or chain by a safety hook, clevis or other safe attachment.

Section 20. Such shafts shall be provided with guides and guide attachments applied in such manner as to prevent the bucket from swinging while descending or ascending therein, and such guides and guide attachments shall be maintained at a distance of not more than seventy-five (75) feet from the bottom of such shaft, until its sinking shall have been completed, but this section shall not apply to shafts one hundred (100) feet or less in depth.

Section 21. Where the strata are not safe every shaft shall be securely cased, lined or otherwise made secure.

Section 22. The following rules shall be observed, as far as practicable, in every shaft to which this act applies.

First. After each and every blast the chargeman must see that all loose material is swept down from the timbers before the workmen descend to their work.

Second. After a suspension of work, and also after firing a blast in a shaft where explosive gases are evolved, the person in charge must have the said shaft examined and tested with a safety lamp before the workmen are allowed to descend.

Third. Not more than four persons shall be lowered or hoisted in any shaft on a bucket at the same time, and no person shall ride on a loaded bucket.

Fourth. Whenever persons are employed on platforms in shafts the person in charge must see that the said platforms are properly and safely constructed.

Fifth. While shafts are being sunk all blasts therein must be exploded by an electric battery.

Sixth. Every person who fails to comply with or who violates the provisions of this article shall be guilty of an offense against this act.

ARTICLE V.

Boilers and Connections, Machinery, &c.

Section 1. All boilers used for generating steam in and about mines and collieries shall be kept in good order, and the owner, operator or superintendent shall have them examined and inspected by a qualified person as often as once in six months, and oftener if needed. The result of such examination, under oath, shall be certified in writing to the inspector for the district within thirty (30) days thereafter.

Section 2. It shall not be lawful to place any boiler or boilers, for the purpose of generating steam, under nor nearer than one hundred (100) feet to any coal breaker or other structure in which persons are employed in the preparation of coal: Provided, That this section shall not apply to boilers or breakers already erected.

Section 3. Each nest of boilers shall be provided with a safety valve of sufficient area for the steam to escape and with weights or springs properly adjusted.

Section 4. Every boiler house shall be provided with a steam gauge properly connected with the boilers, to indicate the steam pressure, and another steam gauge shall be attached to the steam pipe in the engine house and placed in such position that the engineer or fireman can readily examine them and see what pressure is carried. Such steam gauges shall be kept in good order, tested and adjusted as often as once in every six months and their condition reported to the inspector in the same manner as the report of boiler inspection.

Section 5. All machinery used in or about the mines and collieries, and especially in breakers, such as engines, rollers, wheels, screens, shafting and belting shall be protected by covering or railing so as to prevent persons from inadvertently walking against or falling upon the same. The sides of stairs, trestles and dangerous plank walks in and around the collieries shall be provided with hand and guard railing to prevent persons from falling over their sides. This section shall not forbid the temporary removal of a fence, guard rail or covering for the purpose of repairs or other operations, if proper precautions are used, and the fence, guard rail or coreving is replaced immediately thereafter.

Section 6. A sober and competent person, not under eighten (18) years of age, shall be engaged to run the breaker engine and he shall attend to said engine while the machinery is in motion.

Section 7. A signal apparatus shall be established at important points in every breaker so that in case of an accident the engineer can be propmtly notified to stop the machinery.

Section 8. No person under fifteen (15) years of age shall be appointed to oil the machinery, and no person shall oil dangerous parts of such machinery while it is in motion.

Section 9. No person shall play with, loiter around or interfere with any machinery in or about any mine or colliery.

Section 10. Failure to comply with the provisions of this article shall be deemed an offense against this act.

ARTICLE VI.

Wash Houses.

Section 1. It shall be the duty of the owner, operator or superintendent of each mine or colliery, at the request in writing of twenty or more men employed in any of the mines, to provide a suitable building, not an engine or boiler house, which shall be convenient to the principal entrance of such mine, for the use of the persons employed therein for the purpose of washing themselves and changing their clothes when entering the mine and returning therefrom. The said building shall be maintained in good order, be properly lighted and heated, and supplied with pure cold and warm water, and shall be provided with facilities for persons to wash. If any person or persons shall neglect or fail to comply with the provisions of this article, or maliciously injure or destroy, or cause to be injured or destroyed, the said building, or any part thereof, or any of the appliances or fittings used for supplying light, heat and water therein, or doing any act tending to the injury or destruction thereof, he or they shall be deemed guilty of an offense against this act.

ARTICLE VII.

Ambulances and Stretchers.

Section 1. The owner, operator or superintendent of every mine or colliery, except as hereinafter provided, shall provide and keep at such mine or colliery an ambulance and also at least two (2) stretchers, for the purpose of conveying to their places of abode, any person or persons who may be injured while in the discharge of his or their work at such mine or colliery.

Section 2. The said ambulance shall be constructed upon good, substantial and easy springs. It shall be covered and closed and shall have windows on the sides or ends. It shall be of sufficient size to convey at least two (2) injured persons with two (2) attendants at one time, and shall be provided with spring mattresses or other comfortable bedding to be placed on roller frames, together with sufficient covering and protection and convenient movement of the injured. It shall also be provided with seats for the attendants. The stretchers shall be constructed of such material and in such manner as to afford the greatest ease and comfort in the carriage of the injured person.

Section 3. Whenever any person or persons employed in or about a mine or colliery shall receive such injury by accident or otherwise, while so employed, as would render him or them unable to walk to his or their place of abode, the owner, operator or superintendent of such mine or colliery shall immediately cause such person or persons to be removed to his or their place of abode or to an hospital as the case may require.

Section 4. It is provided, however, that the owner, operator or superintendent of any mine or colliery shall be excepted from the requirements of an ambulance, as aforesaid, if the places of abode of all the workmen at such mine or colliery be within a radius of a half mile from the principal entrance to such mine.

Section 5. It is provided further, that where two or more mines or collieries are located within one mile of each other, or the ambulance is located within one mile of each colliery, but one ambulance, as aforesaid, shall be required, if the said mines or collieries have ready and quick means of communication, one with the other, by telegraph or telephone.

Section 6. An ambulance, as aforesaid, shall not be required at any mine or colliery at which less than twenty (20) persons are employed.

Section 7. In case the distance from any mine or colliery to the place of abode of the person injured, is such as to permit his conveyance to his home or to an hospital more quickly and conveniently by railway, such mode of conveyance shall be permitted, but in such case the conveyance must be under cover and the comfort of the injured person must be provided for.

ARTICLE VIII.

Certified Mine Foremen.

Section 1. It shall not be lawful, neither shall it be permitted, for any person or persons to act as mine foreman or assistant mine foreman of any coal mines or colliery, unless they are registered as a holder of a certificate of qualification or service under this act.

Section 2. Certificates of qualification to mine foremen and assistant mine foremen shall be granted by the Secretary of Internal Affairs to every applicant who may be reported by the examiners, as hereinafter provided, as having passed a satisfactory examination and as having given satisfactory evidence of at least five years' practical experience as a miner, and of good conduct, capability and sobriety.

The certificate shall be in manner and form as shall be prescribed by the Secretary of Internal Affairs, and a record of all certificates issued shall be kept in his department.

Section 3. For the purpose of examination of candidates for such certificates, a board of examiners shall be appointed in each of the inspection districts provided for by this act. The said board shall consist of the district inspector of mines, two (2) practical miners and one owner, operator or superintendent of a mine. The said inspector shall act ex-officio, and the said engineer and owner, operator or superintendent shall be appointed in like manner and at the same time as the boards of examiners for candidates for mine inspectorship under this act are now appointed. The said board shall act as such for the period of one year from the date of their appointment. Meetings of the board may be held at any time, and they may make such rules and conduct such examinations as in their judgment may seem proper for the purpose of such examinations. The said board shall report their action to the Secretary of Internal Affairs, and at least three (3) of the members thereof shall certify to the qualification of each candidate who has passed such examination. The traveling expenses of the members of such board to and from their place of meeting, together with the sum of five dollars per day each to the said two (2) practical miners and owner, operator or superintendent, members of each board, for each day they are actually engaged therein, not exceeding ten (10) days in all, during the year, shall be paid by the Commonwealth on an order of the Auditor General drawn on the State Treasurer upon the certificate of the mine inspector, member of such board.

Section 4. Certificates of qualification to mine foreman and assistant mine foreman shall be granted by the Secretary of Internal Affairs to every applicant who may be reported by the examiners, as heretofore provided, as having passed a satisfactory examination and as having given satisfactory evidence of at least five (5) years' practical experience as a miner, and of good conduct, capability and sobriety. The certificate shall be in manner and form as shall be prescribed by the Secretary of Internal Affairs, and a record of all certificates issued shall be kept in the department. Certificates of qualification and certificate of service shall contain the full name, age and place of birth of the applicant, as also the length and nature of his previous service in or about the mines.

Section 5. Before certificate as aforesaid shall be granted applicants for same shall pay to the Secretary of Internal Affairs the following fee, namely:

For examination, one dollar; for registration of certificate, one dollar, for certificate, one dollar. All fees so received shall be covered into the treasury of the Commonwealth.

Section 6. No mines shall be operated for a longer period than thirty days without the supervision of a mine foreman. In case any mine is worked a longer period than thirty (30) days without such certified mine foreman, the owner, operator or superintendent thereof shall be subject to a penalty of twenty dollars per day for each day over the said thirty (30) days during which the said mine is operated.

Section 7. In case of the loss or destruction of a certificate the Secretary of Internal Affairs may supply a copy thereof to the person losing the same upon the payment of the sum of fifty (50) cents: Provided, It shall be shown to the satisfaction of the Secretary that the loss has actually occurred.

Section 8. If any person or persons shall forge or counterfeit a certificate or knowingly make or cause to be made any false statement in any certificate under this act, or in any official copy of the same, or shall urge others to do so, or shall utter or use any such forged or false certificate, or unofficial copy thereof, or shall make, give, utter, produce or make use of any false declaration, representation or statement in any such certificate or copy thereof, or any document containing the same, he or they shall be guilty of a misdemeanor, and upon conviction thereof, shall be fined two hundred dollars, or imprisoned for a term not exceeding one (1) year, or both, at the discretion of the court trying the case.

Section 9. And no person shall be permitted to act as fire boss in any coal mine or colliery, except he has had five (5) years' practical experience in mines as a miner, three (3) of which he shall have as a miner wherein noxious and explosive gases are evolved, and the said fire boss shall certify to the same before entering upon his duties, before an alderman, justice of the peace or other person authorized to administer oaths, and a copy of said deposition shall be filed with the district inspector of mines wherein said person is employed.

ARTICLE IX.

Employment of Boys and Females.

Section 1. No boy under the age of fourteen (14) years, and no woman or girl of any age, shall be employed or permitted to be in any mine for the purpose of employment therein. Nor shall a boy under the age of twelve years or a woman or girl of any age, be employed or permitted to be in or about the outside structures or workings of a colliery for the purpose of employment, but it is provided, however, that this prohibition shall not affect the employment of a boy or female of suitable age in an office or in the performance of clerical work at a colliery.

Section 2. When an employer is in doubt as to the age of any boy or youth applying for employment in or about a mine or colliery, he shall demand and receive proof of the said lawful employment age of such boy or youth, by certificate from the parent or guardian, before said boy or youth shall be employed.

Section 3. If any person or persons contravene or fail to comply with the provisions of this act in respect to the employment of boys, young male persons or females, or if he or they shall connive with or permit others to contravene or fail to comply with said provisions, or if a parent or guardian of a boy or young male person make or give a false certificate of the age of such boy or young male person, or knowingly do or perform any other act for the purpose of securing employment for a boy or young male person under the lawful employment age and in contravention of the provisions of this act, he or they shall be guilty of an offense against this act.

ARTICLE X.

Ventilation.

Section 1. The owner, operator or superintendent of every mine shall provide and maintain a constant and adequate supply of pure air for the same, as hereinafter provided.

Section 2. It shall not be lawful to use a furnace for the purpose of ventilating any mine wherein explosive gases are generated.

Section 3. The minimum quantity of air thus produced, shall not be less than two hundred (200) cubic feet per minute for each and every person employed in any mine, and as much more as the circumstances may require.

Section 4. The ventilating currents shall be conducted and circulated to and along the face of each and every working place throughout the entire mine, in sufficient quantities to dilute, render harmless and sweep away smoke and noxious or dangerous gases, to such an extent that all working places and traveling roads shall be in a safe and fit state to work and travel therein.

Section 5. All worked out or abandoned parts of a mine in operation, so far as practicable, shall be kept free of dangerous bodies of gases or water, and if found impracticable to keep the entire mine free from an accumulation of gases or water, the mine inspector must be immediately notified.

Section 6. Every mine employing more than seventy-five (75) persons must be divided into two or more districts. Each district shall be provided with a separate split of pure air and the ventilation shall be so arranged, that not more than seventy-five persons shall be employed at the same time in any one current or split of air.

The inlet and return air passages for any particular district must be separated by a pillar of coal or stone, if the thickness and dip of the vein will permit, except where it is necessary to cut through said dividing pillar for the purposes of ventilation, traffic or drainage.

Section 7. All air passages shall be of sufficient area to allow the free passage of not less than two hundred (200) cubic feet of air per minute for every person working therein; and in no case, in mines generating explosive gases, shall the velocity exceed four hundred and fifty (450) lineal feet per minute, in any opening through which the air currents pass, if gauze safety lamps are used, except in the main inlet or outlet air ways.

Section 8. All cross-cuts connecting the main inlet and outlet air passages of every district, when it becomes necessary to close them permanently, shall be substantially closed with brick or other suitable building material, laid in mortar or cement whenever practicable, but in no case shall said air stoppings be constructed of plank except for temporary purposes.

Section 9. All doors used in assisting or in any way affecting the ventilation shall be so hung and adjusted that they will close automatically.

Section 10. All main doors shall have an attendant whose constant duty it shall be to open them for transportation and travel and prevent them from standing open longer than is necessary for persons or cars to pass through.

Section 11. All main doors shall be so placed that when one door is open, another, which has the same effect upon the same current, shall be and remain closed and thus prevent any temporary stoppage of the air current.

Section 12. An extra main door shall be so placed and kept standing open, so as to be out of reach of accident, and so fixed that it can be at once closed in the event of an accident to the doors in use.

Section 13. The frame work of such main doors shall be substantially secured in stone or brick, laid in mortar or cement unless otherwise permitted in writing by the inspector.

Section 14. All permanent air bridges shall be substantially built of such material and such strength as the circumstances may require.

Section 15. The quantities of air in circulation shall be ascertained with an anemometer or other efficient instrument; such measurements shall be made by the inside foreman or his assistant once a week at the inlet and outlet airways, also at or near the face of each gangway and at the nearest cross-heading to the face of each gangway and at the nearest cross-heading to the face of the inside and outside chamber or breast where men are employed, and the headings shall not be driven more than sixty (60) feet from the face of each chamber or breast and shall be entered in the colliery report book.

Section 16. A report of these air measurements shall be sent to the inspector before the twelfth day of each month, for the preceding month, together with a statement of the number of persons employed in each district.

Section 17. All ventilators used at mines shall be provided with recording instruments by which the speed of the ventilators or the ventilating pressure shall be registered for each hour, and such data shall be preserved at the colliery for future reference, for a period of three months.

Section 18. Any person or persons who shall neglect or fail to comply with the provisions of this article, or who shall make any false report in regard to air measurements, shall be guilty of an offense against this act.

ARTICLE XI.

Props and Timbers.

Section 1. It shall be the duty of the owner, operator, superintendent or mine foreman of every mine to furnish to the miners all props, ties, rails and timbers necessary for the safe mining of coal and for the protection of the lives of the workmen. Such props, ties, rails and timbers shall be suitably prepared and shall be delivered to the workmen as near to their working places as they can be conveyed in ordinary mine cars, free of charge.

Section 2. Every workman in want of props, ties, rails or timbers shall notify the mine foreman or his assistant of the fact at least one day in advance, giving the length of the props or timber required; and in case of danger from loose roof or sides, he shall not continue to cut or load coal until the said props and timber have been properly furnished and the place made secure.

Section 3. A failure to comply with the provisions of this article shall be deemed an offense against this act, and shall be taken to be negligence per se on the part of the owner, operator, superintendent or mine foreman, as the case may be, of such mine, in action for the recovery of damages for accidents resulting from the insufficient propping of such mine, through failure to furnish the necessary props or timbers.

ARTICLE XII.

General Rules.

The following general rules shall be observed in every mine to which this act applies:

Rule 1. The owner, operator or superintendent of a mine or colliery shall use every precaution to ensure the safety of the workmen in all cases, whether provided for in this act or not, and he shall place the underground workings thereof, and all that is related to the same, under the charge and daily supervision of a competent person who shall be called "mine foreman."

Rule 2. Whenever a mine foreman cannot personally carry out the provisions of this act so far as they pertain to him, the owner, operator or superintendent shall authorize him to employ a sufficient number of competent persons to act as his assistants, who shall be subject to his orders.

Rule 3. The mine foreman shall have charge of all matters pertaining to ventilation, and the speed of the ventilators shall be particularly under his charge and direction; and any superintendent who shall cause the mine foreman to disregard the provisions of this act shall be amenable in the same manner as the mine foreman.

Rule 4. All accessible parts of an abandoned portion of a mine in which explosive gases have been found, shall be carefully examined by the mine foreman or his assistants at least once a week, and all danger found existing therein shall be immediately removed. A report of said examination shall be recorded in a book kept at the colliery for that purpose and signed by the person making the same.

Rule 5. In mines generating explosive gases, the mine foreman or his assistant shall make a careful examination every morning of all working places and traveling roads and all other places which might endanger the safety of the workmen, before the workmen shall enter the mine, and such examination shall be made with a safety lamp within three (3) hours at most, before time for commencing work, and a workman shall not enter the mine or his working place until the said mine or part thereof and working place are reported to be safe. Every report shall be recorded without delay in a book which shall be kept at the colliery for the purpose and shall be signed by the person making the examination.

Rule 6. The person who makes said examination shall establish proof of the same by marking plainly the date thereof at the face of each working place and all other places examined.

Rule 7. A station or stations shall be established at the entrance to each mine or different parts of each mine, as the case may require, and a workman shall not pass beyond any such station until the mine or part of the mine beyond the same has been inspected and reported to be safe. It shall be the duty of the fire boss to remain at the danger station until relieved by some person authorized by himself or the mine foreman, who shall stand guard until said mine or part of mine shall be reported safe, and he shall not let any person pass without permission from the fire boss.

Rule 8. If at any time it is found by the person for the time being in charge of the mine or any part thereof, that by reason of noxious gases prevailing in such mine or such part thereof, or of any cause whatever the mine or the said part is dangerous, every precaution shall be used to ensure the safety of the workmen; and every workman, except such persons as may be required to remove the danger, shall be withdrawn from the mine, or such part thereof as is so found dangerous, until the said mine or said part thereof is examined by a competent person and reported by him to be safe.

Rule 9. In every working approaching any place where there is likely to be accumulation of explosive gases, or in any working in which danger is imminent from explosive gases, no light or fire other than a locked safety lamp shall be allowed or used. Whenever safety lamps are required in any mine they shall be the property of the owner of said mine, and a competent person, who shall be appointed for the purpose, shall examine every safety lamp immediately before it is taken into the workings for use, and ascertain it to be clean, safe and securely locked, and safety lamps shall not be used until they have been so examined and found safe, clean and securely locked, unless permission be first given by the mine foreman to have the lamps used unlocked.

Rule 10. No one, except a duly authorized person, shall have in his possession a key or any other contrivance for the purpose of unlocking any safety lamp in any mine where locked lamps are used. No lucifer matches or any other apparatus for striking light shall be taken into said mine or parts thereof.

Rule 11. No blast shall be fired in any mine where locked safety lamps are used except by permission of the mine foreman or his assistants, and before a blast is fired, the person in charge must examine the place and adjoining places and satisfy himself that it is safe to fire such blast before such permission is given.

Rule 12. The mine foreman or his assistant shall visit and examine every working place in the mine at least once every alternate day, while the men of such place are or should be at work, and shall direct that each and every working place is properly secured by props or timber, and that safety in all respects is assured by directing that all loose coal or rock shall be pulled down or secured, and that no person shall be permitted to work in an unsafe place unless it be for the purpose of making it secure.

Rule 13. The mine foreman, or some other competent person or persons to be designated by him, shall examine at least once every day all slopes, shafts, main roads, traveling ways, signal apparatus, pulleys and timbering and see that they are in safe and efficient working condition.

Rule 14. Any person having charge of a working place in any mine shall keep the roof and sides thereof properly secured by timber or otherwise so as to prevent such roof and sides from falling, and he shall not do any work or permit any work to be done under loose or dangerous material except for the purpose of securing the same.

Rule 15. Whenever a place is likely to contain a dangerous accumulation of water, the working approaching such place shall not not exceed twelve (12) feet in width, and there shall be constantly kept, at a distance of not less than twenty (20) feet in advance, at least one (1) bore hole near the center of the working and sufficient flank bore holes on each side.

Rule 16. No person shall ride upon or against any loaded car, cage or gun-boat in any shaft, slope or plane in or about a mine or colliery.

Rule 17. Not more than ten (10) persons shall be hoisted or lowered at any one time in any shaft or slope, and whenever five persons shall arrive at the bottom of any shaft or slope in which persons are regularly hoisted or lowered they shall be furnished with an empty car or cage and be hoisted, except however, in mines where there is provided a traveling way having an average pitch of fifteen (15) degrees or less and not more than one thousand (1,000) feet in length. This, however, shall not prohibit the hoisting or lowering of twenty (20) persons at one time on slopes where two (2) or more loaded cars are regularly hoisted: Provided, That not less than thirty (30) workmen working therein, make such request in writing, to the inspector of the district, and if, in his judgment, the hoisting appliances in every respect are of sufficient strength, he may comply with the request of the workmen.

Provided, That in any coal mine or colliery where the hoisting appliances are not of sufficient strength to hoist or lower the number of persons named, he shall have the power to reduce the number of persons to be hoisted or lowered.

Rule 18. An engineer placed in charge of an engine whereby persons are hoisted or lowered in any mine, shall be a sober and competent person of not less than twenty-one (21) years of age.

Rule 19. Every engineer shall work his engine slowly and with great care when any person is being lowered or hoisted in a shaft or slope and no one shall interfere with or intimidate him while in the discharge of his duties.

Rule 20. An engineer who has charge of the hoisting machinery by which persons are lowered or hoisted in a mine, shall be in constant attendance for that purpose during the whole time any person or persons are below ground, and he shall not allow any person or persons, except such as may be deputed by the owner, operator or superintendent, to handle or meddle with the engine under his charge or any part of its machinery.

Rule 21. When any person is about to descend or ascend a shaft or slope, the headman or footman, as the case may be, shall inform the engineer by signal or otherwise of the fact, and the engineer shall return a signal before moving or starting the engine. In the absence of a headman or footman the person or persons about to descend or ascend shall give and receive the signals in the same manner.

Rule 22. The owner, operator or superintendent of a colliery shall place a competent person to be called "outside foreman," in charge of the breaker and the outside work of such colliery and who shall direct, and as far as practicable, see that the provisions of this act are complied with in respect to the breaker, outside machinery, ropes, cages and all other things pertaining to the outside work, unless otherwise provided for in this act.

Rule 23. In all coal breakers where the coal dust is so dense as to be injurious to the health of persons employed therein, the owner, operator or superintendent of said breaker shall, upon the request of the inspector, immediately adopt measures for the removal of the dust, as far as practicable.

Rule 24. Any miner or other workman who shall discover anything wrong with the ventilating current or with the condition of the roof, side, timber or roadway, or with any other part of the mine in general, such as would lead him to suspect danger to himself or his fellow workmen or to the property of his employer, shall immediately report the same to the mine foreman or other person, for the time being in charge of that portion of the mine.

Rule 25. Any person or persons who shall knowingly or wilfully damage, or without proper authority, remove or render useless any fencing, means of signaling, apparatus, instrument or machine, or shall throw open or obstruct any airway, or open a ventilating door and not have the same closed, or enter a place in or about a mine against caution, or carry fire, open lights or matches in places where safety lamps are used, or handle without proper authority, or disturb any machinery or cars, or do any other act or thing whereby the lives or health of persons or the security of the property in or about a mine or colliery are endangered, shall be guilty of an offense against this act.

Rule 26. Gunpowder or any other explosive shall not be stored in a mine, and a workman shall not have at any time in any one place, more than one keg or box containing twenty-five (25) pounds, unless more is necessary for a person to accomplish one day's work.

Rule 27. Every person who has gunpowder or other explosive in a mine, shall keep it in a wooden or metallic box securely locked, and such box shall be kept at least ten (10) feet from the tracks in all cases where room at such a distance is available.

Rule 28. Whenever a workman shall open a box containing explosive or while in any manner handling the same, he shall first place his lamp not less than five (5) feet from such explosive and in such a position that the air current cannot convey sparks to it, and a workman shall not approach nearer than five (5) feet to an open box containing powder, with a lamp, lighted pipe or any other thing containing fire.

Rule 29. When high explosives other than gunpowder are used in any mine, the manner of storing, keeping, moving, charging and firing or in any manner using such explosives, shall be in accordance with special rules as furnished by the manufacturers of the same. The said rules shall be endorsed with his or their official signature and shall be approved by the owner, operator or superintendent of the mine in which such explosives are used.

Rule 30. In charging holes for blasting in slate or rock in any mine, no iron or steel-pointed needle shall be used, and a tight cartridge shall not be rammed into a hole in coal, slate or rock with an iron or steel tamping bar, unless the end of the tamping bar is tipped with at least six (6) inches of copper or other soft metal.

Rule 31. A charge of powder or any other explosive in slate or rock which has missed fire shall not be withdrawn or the hole reopened.

Rule 32. A miner or other person who is about to explode a blast by the use of patent or other squibs or matches, shall not shorten the match, nor saturate it with mineral oil, nor turn it down when placed in the hole, nor ignite it except at its extreme end, nor do anything tending to shorten the time the match will burn.

Rule 33. When a workman is about to fire a blast he shall be careful to notify all persons who may be in danger therefrom, and shall give sufficient alarm before and after igniting the match so that any person or persons who may be approaching shall be warned of the danger.

Rule 34. Before commencing work and also after the firing of every blast, the miner working a breast or any other place in a mine, shall enter such breast or place to examine and ascertain its condition, and his laborer or assistant shall not go to the face of such breast or place until the miner has examined the same and found it to be safe.

Rule 35. No person shall be employed to blast coal or rock unless the mine foreman is satisfied that such person is qualified, by experience and judgment, to perform the work with ordinary safety.

Rule 36. A person who is not a practical miner shall not charge or fire a blast in the absence of an experienced miner, unless he has given satisfactory evidence of his ability to do so with safety, and has obtained permission from the mine foreman or person in charge.

Rule 37. An accumulation of gas in mines shall not be removed by brushing where it is practicable to remove it by brattice.

Rule 38. When gases ignited by blast or otherwise, the person igniting the same shall immediately extinguish it, if possible, and notify the mine foreman or his assistant of the fact, and workmen must see that no gas blowers are left burning upon leaving their working places.

Rule 39. Every fireman in charge of a boiler or boilers for the generation of steam, shall keep a constant watch of the same. He shall see that the steam pressure does not at any time exceed the limit allowed by the outside foreman or superintendent. He shall frequently try the safety valve, and shall not increase the weight on the same. He shall maintain a proper depth of water in each boiler, and if anything should happen to prevent this, he shall report the same without delay to the foreman, for the time being in charge, and take such other action as may under the particular circumstances be necessary for the protection of life and preservation of property.

Rule 40. At every shaft or slope in which provision is made in this act for lowering and hoisting persons, a headman and footman shall be designated by the superintendent or foreman to be at their proper places from the time that persons begin to descend, until all the persons who may be at the bottom of said shaft or slope when quitting work shall be hoisted. Such headman and footman shall personally attend to the signals and see that the provisions of this act, in respect to lowering and hoisting persons in shafts or slopes, shall be complied with.

Rule 41. No person, except the man giving the signal, shall jump on a car, cage or gunboat after the signal to start has been given, and if any person should enter a car, cage or gunboat in excess of the lawful number the headman or footman shall notify him of the fact and request him to get off, which request must be immediately complied with Any violation of this rule must be reported promptly to the mine foreman.

Rule 42. An empty trip shall be hoisted in any shaft or slope where the engine has been standing idle for an hour or more, before men are hoisted or lowered in said shafts or slopes, and no person or persons shall ascend any shaft or slope when working on the night turn, until one trip shall first be hoisted therein.

Rule 43. Every passage-way used by persons in any mines and also used for transportation of coal or other material, shall be made of sufficient width to permit persons to pass moving cars with safety, but if found impracticable to make any passage-way of sufficient width, then holes of ample dimensions, and not more than one hundred and fifty (150) feet apart, shall be made on one side of said passage-way. The said passage-way and safety holes shall be kept free from obstructions and shall be well drained; the roof and sides of the same shall be made secure.

Rule 44. When locomotives are used in any mine their speed shall not exceed six (6) miles per hour, and an efficient alarm shall be provided and attached to the front end of every train of cars pushed by a locomotive in any mine or part of a mine.

Rule 45. Locomotives propelled by steam, if using fire, shall not be used in any passage-way which is also used as an in-take air-way to any mine or part of a mine where persons are employed, unless there be a sufficient quantity of air circulating therein to maintain a healthy atmosphere.

Rule 46. No person shall couple or uncouple loaded or empty cars while the same are in motion: Provided however, That this shall not apply to the top or bottom men of slopes, planes or shafts.

Rule 47. When cars are run on gravity roads by breaks or sprags, the runner shall only ride on the rear end of the last car, and when said cars are run by sprags, a space of not less than two (2) feet from the body of the car shall be made on one or both sides of the track, wherever it may be necessary for the runner to pass along the side of the moving car or cars, and said space or passage-way shall always be kept free from obstructions.

Rule 48. No miner or laborer shall run cars out of any breast or chamber or on any gravity road unless he is a suitable person, employed by the mine foreman for that particular work; and no person shall be employed by any mine foreman to perform such work, under the age of sixteen (16) years.

Rule 49. Safety holes shall be made at the bottom of all slopes and planes and be kept free from obstruction to enable the footman to escape readily in case of danger.

Rule 50. Safety blocks or some other device for the purpose of preventing cars from falling into a shaft or running away on a slope or plane, shall be placed at or near the head of every shaft, slope or plane, and said safety blocks or other device must be maintained in good working order.

Rule 51. No person shall travel on any gravity train while cars are being hoisted or lowered thereon. Whenever ten (10) persons arrive at the bottom or top of any plane on which it is necessary for men to travel, traffic thereon shall be suspended for a period of time long enough to permit them to reach the top or bottom of said plane.

Rule 52. No mine cars shall be used in any mine unless the bumpers are of sufficient length and width to keep the bodies of said cars separated by not less than twelve (12) inches when the cars stand on a straight level road and the bumpers touch each other.

Rule 53. It shall be the duty of the owner, operator or superintendent of any or all coal breakers, to have them properly heated in order to prevent injury to the health of persons employed therein.

Rule 54. For the purpose of making known the rules and the provisions of this act to all persons employed in or about such mine or colliery to which this act applies, an abstract of the act and rules shall be posted up in legible characters in some conspicuous place or places at or near the mine or colliery, where they may be conveniently read by the persons employed, and so often as the same becomes obliterated or destroyed the owner, operator or superintendent shall cause them to be renewed with all reasonable dispatch. Any person who pulls down, injures or defaces such abstract of the act or rules when posted up in pursuance to the provisions of this act, shall be guilty of an offense against this act.

Rule 55. No person or persons working in any coal mine or colliery shall cut any props or timbers while the same are in position to support the roof or sides. When it becomes necessary to remove any of the said props or timbers for the purpose of mining coal that may be supported by the same, to dislodge any of the said props or timbers, it must be done by blasting.

Rule 56. It shall not be lawful for any mine foreman or superintendent of any mine or colliery to employ any person who is not competent to understand the regulations of any mine evolving explosive gases: Provided, That this rule will not apply to a section of mine, free from the said explosive gases.

Rule 57. Any superintendent or mine foreman who prevents the footman from giving an empty car or cage to the number of men designated in a former rule, shall, upon information by any person engaged in the mines, given the mine inspector, be fined the sum of fifty dollars for each offense.

Rule 58. Every person who fails to comply with any of the foregoing rules or any of the provisions of this article, shall be guilty of an offense against this act.

ARTICLE XIII.

Inquests.

Section 1. Whenever loss of life to a miner or other employe occurs in or about a mine or colliery, notice thereof shall be given promptly to the inspector of mines for the district in which the accident occurred, by the mine foreman or outside foreman or other person having immediate charge of the work at the time of the accident; and when death results from personal injury such notice shall be given promptly after the knowledge of death comes to the said foreman or person in charge.

Section 2. Whenever loss of life occurs or whenever the lives of persons employed in a mine or at a colliery are in danger from any accident, the inspector of mines shall visit the scene of the accident as soon as possible thereafter and offer such suggestions, as in his judgment shall be necessary, to protect the lives and secure the safety of the persons employed. In case of death from such accident, and after examination he finds it necessary that a coroner's inquest shall be held, he shall notify the coroner to hold such inquest without delay, and if no such inquest be held by the coroner within twenty-four (24) hours after such notice, the inspector shall institute a further and fuller examination of such accident, and for this purpose he shall have power to compel the attendance of witnesses at such examination and to administer oaths and affirmations to persons testifying thereat. The inspector shall make a record of all such investigations and accidents, which record shall be preserved in his office. The costs of such investigation shall be paid by the county in which the accident occurred in like manner as costs of inquests held by coroners or justices of the peace are now paid.

Section 3. An inquest held by the coroner upon the body of a person killed by explosion or other accident, shall be adjourned by the coroner if the inspector of mines be not present to watch the proceedings, and the coroner in such case shall notify the inspector, in writing, of such adjourned inquest, and the time and place of holding the same, at least three (3) days previous thereto.

Section 4. Due notice of an intended inquest to be held by the coroner, shall be given by the coroner to the inspector, and at any such inquest the inspector shall have the right to examine witnesses.

Section 5. If, at any inquest held over the body or bodies of persons whose death was caused by an accident in or about a mine or colliery, the inspector be not present, and it is shown by the evidence given at the inquest that the accident was caused by neglect or by any defect in or about the mine or colliery, which in the judgment of the jury, requires a remedy, the coroner shall send notice in writing to said inspector of such neglect or default.

Section 6. No person who is interested personally, nor a person employed in the mine or at a colliery in or at which loss of life has occurred by accident, shall be qualified to serve on a jury empaneled on the inquest, and a constable or other officer shall not summons such a person so qualified as juror, but the coroner shall empanel a majority of the jury from miners who are qualified to judge of the nature of the accident; every person who fails to comply with the provisions of this article shall be guilty of an offense against this act.

ARTICLE XIV.

Returns, Notices, Et Cetera.

Section 1. Notices of death or serious injuries resulting from accidents in or about mines or collieries, shall be made to the inspector of mines, in writng, and shall specify the name, age and occupation of the person killed or injured. and also the nature and character of the accident and of the injury caused thereby.

Section 2. The owner, operator or superintendent of a mine or colliery, shall, without delay, give notice to the inspector of the district in which said mine or colliery is situated in any or all of the following cases:

First. Where any working is commenced for the purpose of opening a new slope or mine to which this act applies.

Second. Where any mine is abandoned or the workings thereof discontinued.

Third. Where the working of any mine is recommenced after any abandonment or discontinuance for a period exceeding three months.

Fourth. Where any new coal breaker is completed and work commenced therein for the purpose of preparing coal for market.

Fifth. Where the pillars of a mine are to be removed or robbed.

Sixth. Where a squeeze or crush or any other cause or change may seem to affect the safety of persons employed in any mine, or where fire occurs or a dangerous body of gas is found in any mine.

Section 3. On or before the first day of February in each year, the owner, operator or superintendent of every mine or colliery, shall send to the inspector of the district, a correct report specifying with respect to the year ending December thirty-first, previously, the name of the operator and officials of the mine, with his postoffice address; the quantity of coal mined, the amount of powder or other explosives consumed; the number of persons employed above and below ground in or about such colliery, classifying the persons so employed. The report shall be in such form as may be from time to time prescribed by the inspectors of the district. Blank forms for said reports shall be furnished by the Commonwealth.

ARTICLE XV.

Injunctions.

Section 1. Upon application of the inspector of mines of the proper district, acting in behalf of the Commonwealth, any of the courts of law or equity having jurisdiction where the mine or colliery proceeded against is situated, whether any proceedings have or have not been taken, shall prohibit, by injunction or otherwise, the working of any mine or colliery in which any person is employed or is permitted to be for the purpose of working in contravention of the provisions of this act, and may award such costs in the matter of the injunctions or other proceedings as the court may think just; but this section shall be without prejudice to any other remedy permitted by law for enforcing the provisions of this act. Written notice of the intention to apply for such injunction in respect to any mine or colliery, shall be made to the owner, operator or superintendent of such mine or colliery not less than twenty-four (24) hours before the application is made.

ARTICLE XVI.

Arbitration.

Section 1. Whenever an inspector finds any mine or colliery or part thereof, or any matter, thing or practice connected with such mine, which in any respect thereof is not covered by or provided against by any provisions of this act or by any rule, to be dangerous or defective, or in his judgment tends to bodily injury to a person, he shall give notice thereof in writing to the owner, operator or superintendent of such mine or colliery, stating in such notice the particular matter or defect requiring remedy and may demand that the same be remedied; but the owner, operator or superintendent of said mine or colliery shall have the right to refer the demand of the inspector to a board of arbitration, and the matter shall then be arbitrated within forty-eight (48) hours of the time such complaint or demand be made. And the party against whom the award is given shall pay all cost attending the case. The said board of arbitration shall be composed of three (3) persons, one of whom shall be chosen by the inspector, one by the said owner, operator or superintendent and a third by the two thus selected, and the decision of a majority of such board shall be final and binding in the matter.

ARTICLE XVII.

Penalties.

Section 1. Any judge of the court of quarter sessions of the peace of the county in which the mine or colliery, at which the offense, act or omission as hereinafter stated has occurred, is situated, is hereby authorized and required, upon the presentation to him of the affidavit of any citizen of the Commonwealth setting forth that the owner, operator or superintendent, or any other person employed in or about such mine or colliery had been negligently guilty of an offense against the provisions of this act, whereby a dangerous accident had resulted or might have resulted to any person or persons employed in such mine or colliery, to issue a warrant to the sheriff of said county directing him to cause such person or persons to be arrested and brought before said judge, who shall hear and determine the guilt or innocence of the person or persons so charged; and if convicted he or they shall be sentenced to pay a fine not exceeding five hundred dollars, in all cases not otherwise provided for in this act, or an imprisonment in the county jail for a period not exceeding three (3) months, or both, at the discretion of the court: Provided, That any defendant may waive trial before a judge as herein provided and at any time, at or before the time of such trial, demand a trial by a jury in the court of quarter sessions, in which case he may enter into a recognizance before said judge with such surety or sureties and in such sum as said judge may approve, conditioned for his appearance at the next court of quarter sessions to answer the charge against him and abide the orders of the court in the premises, meanwhile to be of good behavior and keep the peace, or in default of such recognizance to be committed to the county jail to await such trial.

Section 2. If any person shall feel himself aggrieved by such conviction and sentence before a judge as aforesaid, he may appeal therefrom subject to the following conditions, namely: The appellant shall, within seven days after the decree has been made, give notice to the prosecutor of his intention to appeal, and within the same time enter into a recognizance, with such surety or sureties and in such sum as shall be approved by said judge, conditioned to appear and try such appeal before the next court of quarter sessions of the peace and to abide the judgment of the court thereon and to pay all such costs and penalties as may be there awarded, and upon the compliance with such conditions the judge shall release the appellant from custody pending the appeal.

Section 3. Nothing in this act shall prevent any person from being indicted or liable under any other act, to any higher penalty or punishment than is herein provided, and if the court before whom any such proceeding is had shall be of the opinion that proceedings ought to be taken against such persons under any other act, or otherwise, he may adjourn the case to enable such proceedings to be taken.

Section 4. All offenses under this act are declared to be misdemeanors and in default of payment of any penalty or cost by the party or parties sentenced to pay the same, he or they may be imprisoned for a period not exceeding three (3) months and not less than thirty (30) days.

Section 5. For any violation of duty by the mine inspector prescribed by this act, he shall be deemed guilty of a misdemeanor, and upon conviction, be sentenced to pay a fine of not more than three hundred dollars or be imprisoned for a period not exceeding three months, or either, or both, at the discretion of the court.

Section 6. All fines imposed under this act shall be paid into the county treasury for the use of the county.

Section 7. No conviction or acquittal under this act, in any complaint, shall be received in evidence upon the trial of any action for damages arising from the negligence of any owner, operator or superintendent or employe in any mine or colliery.

Section 8. That for any injury to person or property occasioned by any violation of this act or any failure to comply with its provisions by any owner, operator, superintendent, mine foreman or fire boss of any coal mine or colliery, a right of action shall accrue to the party injured against said owner or operator for any direct damages he may have sustained thereby; and in case of loss of life by reason of such neglect or failure aforesaid, a right of action shall accrue to the widow and lineal heirs of the person whose life shall be lost, for like recovery of damages for the injury they shall have sustained.

ARTICLE XVIII.

Definition of Terms.

In this act, unless the context otherwise requires, the term "coal mine or colliery" includes every operation and work, both under ground and above ground, used or to be used for the purpose of mining and preparing coal.

The term "workings" includes al the excavated parts of a mine, those abandoned as well as the places actually at work.

The term "mine" includes all underground workings and excavations and shafts, tunnels and other ways and openings; also all such shafts, slopes, tunnels and other openings in course of being sunk or driven, together with all roads, appliances, machinery and materials connected with the same below the surface.

The term "shaft" means a vertical opening through the strata and which is or may be used for the purpose of ventilation or drainage or for hoisting men or material in connection with the mining of coal.

The term "slope" means any inclined way or opening used for the same purpose as a shaft.

The term "breaker" means the structure containing the machinery used for the preparation of coal.

The term "owners" and "operators" means any person or body corporate who is the immediate proprietor or lessee or occupier of any coal mine or colliery or any part thereof. The term "owner" does not include a person or body corporate who merely receives a royalty, rent or fine from a coal mine or colliery or part thereof, or is merely the proprietor of the mine subject to any lease, grant or license for the working or operating thereof, or is merely the owner of the soil and not interested in the minerals of the mine or any part thereof. But any "contractor" for the working of a mine or colliery or any part or district thereof, shall be subject to this act as an operator or owner, in like manner as if he were the owner.

The term "superintendent" means the person who shall have, on behalf of the owner, general supervision of one or more mines or collieries.

ARTICLE XIX.

All laws or parts of laws inconsistent or in conflict with the provisions of this act are hereby repealed.

Approved—The 2d day of June, A. D. 1891.

ROBT. E. PATTISON.

AN ACT

Equalizing and fixing the compensation and mileage of the members of the several boards appointed under the provisions of the act approved June second, one thousand eight hundred and ninety-one, to examine candidates for appointment as Inspectors, foremen and fire bosses, respectively, in the anthracite coal mines, and providing for the employment and compensation and mileage of a clerk to each of said boards.

Section 1. Be it enacted, &c., That from and after the passage of this act the members of the several boards appointed under the provisions of the act approved June second, one thousand eight hundred and ninety-one, to examine candidates for appointment respectively as inspectors and foremen of anthracite coal mines, shall receive in lieu of all compensation, mileage, expenses, emoluments or allowances heretofore paid them, as follows: Six dollars per day for each day during which the said members shall be actually in attendance on the sessions of the board, and mileage at the rate of five cents for each mile actually traveled going from the home of the member to the place of meeting of the board and returning from said place to his said home by the shortest practicable railway route: Provided, That mileage shall be paid but once for each continuous session of the board, and by a continuous session shall be meant a session during the course of which no adjournment for a longer period than forty-eight hours shall take place.

Section 2. Each of the boards enumerated or described in the first section of this act shall be and the same is hereby authorized to employ a clerk, whose compensation and mileage shall be the same as that of a member of the board. So much of section four of the act of June second, one thousand eight hundred and ninety-one, as authorizes the boards of examiners of candidates for inspectors of anthracite coal mines to engage the services of a clerk is hereby repealed, and all clerks hereafter appointed by the several boards hereinbefore mentioned shall be appointed under the provisions of this act.

Section 3. The members of the said boards shall, on the final adjournment of each session of their respective boards, submit to the Auditor General sworn statements approved by the president or chairman of their respective boards, setting forth the number of days during which each member shall have been actually in attendance on the sessions of the board of which he is a member during said session, as well as the distance from the home of the member to the place of meeting of his board as aforesaid, by the nearest practicable railway route, and the number of miles actually traveled by him; and the clerks of said boards shall submit like statements, and the Auditor General shall, upon the receipt of such sworn statements draw his warrant upon the State Treasurer in favor of each of such members and clerks for such sums as shall appear to be properly due each.

Section 4. All acts and parts of acts or supplements thereto in conflict herewith are hereby repealed.

Approved—The 26th day of June, A. D. 1895.

DANIEL H. HASTINGS.

AN ACT

To protect the lives and limbs of miners from the dangers resulting from incompetent miners working in the anthracite coal mines of this Commonwealth, and to provide for the examination of persons seeking employment as miners in the anthracite region, and to prevent the employment of incompetent persons as miners in anthracite coal mines, and providing penalties for a violation of the same.

Section 1. Be it enacted, &c., That hereafter no person whomsoever shall be employed or engaged in the anthracite coal region of this Commonwealth, as a miner in any anthracite coal mine, without having obtained a certificate of competency and qualification so to do from the "Miners' Examining Board" of the proper district, and having been duly registered as herein provided.

Section 2. That there shall be established in each of the eight inspection districts in the anthracite coal region, a board to be styled the "Miners' Examining Board" of the ....district, to consist of nine miners who shall be appointed in the same manner as the boards to examine mine inspectors are now appointed from among the most skillful miners actually engaged in said business in their respective districts, and who must have had five years' practical experience in the same. The said persons so appointed shall each serve for a term of two years from the date on which their appointment takes effect, and they shall be appointed upon or before the expiration of the term of the present members of the "Miners' Examining Board," and they shall be and constitute the "Miners' Examining Board" for their respective districts, and shall hold the office for the term for which they were appointed, or until their successors are duly appointed and qualified, and shall receive as compensation for their services three dollars per day for each day actually engaged in this service, and all legitimate and necessary expenses incurred in attending the meetings of said board under the provisions of this act, and no part of the salary of said board or expenses thereof shall be paid out of the State Treasury.

Each of said boards shall organize by electing one of their members president, and one member as secretary, and by dividing themselves in to three sub-committees for the more convenient discharge of their duties, each of said committees shall have all powers hereinafter conferred upon the board; and whenever in this act the words "Examining Board" are used, they shall be taken to include any of the committees thereof.

Every member of said board shall, within ten days of their appointment or being apprised of the same, take and subscribe an oath or affirmation before a properly qualified officer of the county in which they reside, that they will faithfully and impartially discharge the duties of their office.

Any vacancies occurring in said board shall be filled in the manner hereinbefore provided from among such only as are eligible for original appointment.

Section 3. Each of said examining boards shall designate some convenient place within their districts for the meeting of the several committees thereof, and of which due notice shall be given by advertisement in two or more newspapers of the proper county, and so divided as to reach as nearly as practicable all the mining districts therein; but in no case shall such meeting be held in a building where any intoxicating liquors are sold.

Each of said committee shall open at the designated place of meeting a book of registration, in which shall be registered the name and address of each and every person duly qualified under this act to be employed as a miner in an anthracite coal mine. And it shall be the duty of all persons employed as miners to be properly registered, and in case of a removal from the district in which a miner is registered, it shall be his duty to be registered in the district to which he removes.

Application for registration only may be sent by mail to the board. after being properly attested before any person authorized to administer an oath or affirmation in the county in which the applicant resides. The form of application shall be subject to such regulation as may be prescribed by the boards, but in no case shall any applicant be put to any unnecessary expense in order to secure registration.

Section 4. Each applicant for examination and registration and for the certificate hereinafter provided, shall pay a fee of one dollar to the said board, and a fee of twenty-five cents shall be charged for registering any person who shall have been examined and registered by any other board, and the amount derived from this source shall be held by said boards and applied to the expenses and salaries herein provided and such as may arise under the provisions of this act; and the said boards shall report annually, to the court of common pleas of their respective counties and the Bureau of Mines and Mining all moneys received and disbursed under the provisions of this act, together with the number of miners examined and registered under this act and the number who failed to pass the required examination.

Section 5. That it shall be the duty of each of the said boards to meet once every month and not oftener, and said meeting shall be public, and if necessary, the meeting shall be continued to cover whatever portion may be required of a period of three days in succession, and examine under oath all persons who shall desire to be employed as miners in their respective districts; and said board shall grant such persons as may be qualified, certificates of competency or qualification which shall entitle the holder thereof to be employed as and to do the work of miners as may be expressed in said certificate, and such certificates shall be good and sufficient evidence of registration and compentency under this act; and the holder thereof shall be entitled to be registered without an examination in any other of the anthracite districts upon the payment of the fee herein provided.

All persons applying for a certificate of competency, or to entitle them to be employed as miners, must produce satisfactory evidence of having had not less than two years practical experience as a miner, or as a mine laborer in the mines of this Commonwealth, and in no case shall an applicant be deemed competent unless he appear in person before the said board and answer intelligently and correctly at least twelve questions in the English language pertaining to the requirements of a practical miner, and be perfectly identified under oath, as a mine laborer by at least one practical miner holding miners' certificates. The said board shall keep an accurate record of the proceedings of all its meetings, and in said record shall show a correct detailed account of the examination of each applicant, with the questions asked and their answer, and at each of its meetings the board shall keep said record open for public inspection. Any miner's certificate granted under the provisions of this act, and the hereinafter mentioned act approved the ninth day of May, Anno Domini one thousand eight hundred and eighty-nine, shall not be transferable to any person or persons whatsoever, and any transfer of the same shall be deemed a violation of this act. Certificates shall be issued only at meetings of said board, and said certificates shall not be legal unless then and there signed in person by at least three members of said board.

Section 6. That no person shall hereafter engage as a miner in any anthracite coal mine without having obtained such certificate as aforesaid. And no person shall employ any person as a miner who does not hold such certificate as aforesaid, and no mine foreman or superintendent shall permit or suffer any person to be employed under him, or in the mines under his charge and supervision as a miner, who does not hold such certificates. Any person or persons who shall violate or fail to comply with the provisions of this act, shall be guilty of a misdemeanor, and on conviction thereof shall be sentenced to pay a fine not less than one hundred dollars and not to exceed five hundred dollars, or shall undergo imprisonment for a term not less than thirty days and not to exceed six months, or either, or both, at the discretion of the court.

Section 7. The persons who are now serving as members of the Miners' Examining Board as created by the act approved the ninth day of May, Anno Domini one thousand eight hundred and eighty-nine, entitled "An act to provide for the examination of miners in the anthracite region of this Commonwealth, and to prevent the employment of incompetent persons as miners in anthracite coal mines," shall continue under the provisions of this act to serve as members of the "Miners' Examining Board" until the terms for which they were appointed under the provisions of the said act approved the ninth day of May, Anno Domini one thousand eight hundred and eighty-nine, shall have expired, and in the performance of the duties of their office they shall be subject to the provisions and requirements of this act.

Section 8. Nothing in this act shall be construed to in any way, excepting as herein provided, effect miners' certificates which have been lawfully issued under the provisions of the herein mentioned act, approved the ninth day of May, Anno Domini one thousand eight hundred and eighty-nine.

Section 9. It shall be the duty of the several Miners' Examining Boards to investigate all complaints or charges of non compliance or violation of the provisions of this act, and to prosecute all persons so offending; and upon their failure so to do, then it shall become the duty of the district attorney of the county wherein the complaints or charges are made to investigate the same and prosecute all persons so offending, and it shall at all times be the duty of the district attorney to prosecute such members of the Miners' Examining Board as have failed to perform their duty under the provisions of this act; but nothing herein contained shall prevent any citizen, a resident of this Commonwealth, from prosecuting any person or persons violating this act, with power to employ private counsel to assist in the prosecution of the same; upon conviction of any member of the Miners' Examining Board for any violation of this act, in addition to the penalties herein provided, his office shall be declared vacant, and he shall be deemed ineligible to act as a member of the said board.

Section 10. For the purposes of this act the members of the said "Miners' Board" shall have power to administer oaths.

Section 11. All acts or parts of acts inconsistent herewith are hereby repealed.

Approved—The 15th day of July, A. D. 1897.

DANIEL H. HASTINGS.

AN ACT

To amend the tenth section of article ten of an act, entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith," approved the second day of June, Anno Domini one thousand eight hundred and ninety-one, providing that self-acting doors are used.

Section 1. Be it enacted, &c., That the tenth section of article ten of an act, entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith," approved the second day of June, Anno Domini one thousand eight hundred and ninety-one, which reads as follows:

"All main doors shall have an attendant whose constant duty it shall be to open them for transportation and travel and prevent them from standing open longer than is necessary for persons or cars to pass through," be and the same is hereby amended to read as follows:

All main doors shall have an attendant, whose constant duty it shall be to open them for transportation and travel and prevent them from standing open longer than is necessary for persons or cars to pass through, unless a self-acting door is used which is approved by the inspector of the district.

Approved—The 20th day of April, A. D. 1899.

WILLIAM A. STONE.

AN ACT.

Relating to anthracite mines, and providing for the care and life and attention of employes injured in and about said mines.

Section 1. Be it enacted, &c., That within six (6) months after the passage of this act, it shall be unlawful to operate any anthracite mine, employing ten (10) men or more, in the State of Pennsylvania, unless said mine is provided with a sufficient quantity of linseed or olive oil bandages, linen, splints, woolen and waterproof blankets. Said articles shall be stored in a room, erected at a convenient place in the mine, which room shall not be less than eight by twelve feet, and sufficiently furnished, lighted, clean and ventilated so that therein medical treatment may be given injured employes in case of emergency. The furnishings shall be sufficient to accommodate two or more persons, in a reclining and sitting posture.

Section 2. It shall be the duty of the mine foreman or his assistants, in case of injury to any employe by explosion of gas or powder, or by any cause while said miners are at work in said mines, to at once visit the scene of accident, see that the injured is carefully wrapped in woolen blankets and removed to the "medical room," and so treated with oils or other remedies as will add to the comfort and care of the patient. After being treated with all the skill known to the foreman or his assistants, the injured person shall be carefully wrapped up and sent to the surface, to be taken home in an ambulance or to the mining hospital, as may be desired, without expense to the injured party.

Section 3. Where accident to any employe involves injury to limbs or causes loss of blood, the foreman or his assistants shall see that the bandages, splints and linen shall be applied where necessary to prevent loss of blood and relieve pain. The foreman shall, in all cases, see that the injured person is sent to the surface without delay. He shall also keep a book showing required articles on hand, name of persons injured, nature of injury, treatment, and by whom treated at time of accident.

Section 4. It shall be the duty of the mine inspector to visit each of the medical rooms in his district at least once in six months; see that the law is complied with; examine records of the medical room. He shall notify the county coroner of any neglect or non-compliance with the provisions of this act by any operator, which information shall be regarded as evidence on any inquest that may be held on employes, dying from injuries received while working in such anthracite mine.

Section 5. The neglect or refusal to perform the duties required to be performed by any section of this act; by the parties therein required to perform them, or the violation of any of the requirements hereof, shall be deemed a misdemeanor, and shall, upon conviction thereof in the court of quarter sessions of the county wherein the misdemeanor was committed, be punishable by a fine not exceeding five hundred dollars, or imprisoned in the county jail for a period not exceeding six months, or both, at the discretion of the court.

Section 6. That for any injury to employes, occasioned by any violation of the act, or any failure to comply with its provisions, by any owners, operators or superintendent of any coal mine or colliery, a right of action shall accrue to the party injured against said owner or operator, for any direct injuries he may have sustained thereby; and in case of loss of life, limb or bodily power, by reason of such neglect or failure aforesaid, a right of action shall accrue to the person, widow or lineal heirs, for the recovery of damages for the injury he or they shall have sustained.

Section 7. The term "coal mine," as herein used, includes the shafts, slopes, drifts or inclined planes, connected with the excavations penetrating coal stratum or strata, which excavations are ventilated by one general air current, or division thereof, and connected by one general system of mine railroads, over which coal may be delivered to one or more parts outside the mine. The term "mine foreman" means the person who shall have, on behalf of the operators, immediate supervision of a coal mine. The term "operator" means any firm, corporation or individual operating any coal mine.

The term "anthracite mine" shall include any coal mine not now included in the bituminous boundaries.

Section 8. That all acts or parts of acts inconsistent herewith be, and the same are hereby repealed, and all local laws inconsistent herewith are hereby repealed.

Approved—The 29th day of May, A. D. 1901.

WILLIAM A. STONE.

AN ACT

Amending article two of an act, entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania and for the protection and preservation of property connected therewith," approved the second day of June, Anno Domini one thousand eight hundred and ninety-one.

Section 1. Be it enacted, &c., That article two of an act, entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith," approved the second day of June, Anno Domini one thousand eight hundred and ninety-one, and which reads as follows, to-wit:

ARTICLE II.

Inspectors and Inspection Districts.

"Section 1. The counties of Susquehanna, Wayne, Luzerne, Lackawanna, Carbon, Schuylkill, Northumberland, Columbia, Lebanon and Dauphin, or so much of them as may be included under the provisions of this act, shall be divided into eight (8) inspection districts, as follows:

"Section 2. First, All that portion of the Lackawanna coal field lying northeast of East and West Market streets in the city of Scranton, and of Slocum and Drinker streets in the borough of Dunmore, including the coal fields of Susquehanna and Wayne counties.

"Second. That portion of the Lackawanna coal field in Lackawanna county lying southwest of East and West Market streets in the city of Scranton, and west of Slocum and Drinker streets in the borough of Dunmore.

"Third. That portion of the Wyoming coal field situated in Luzerne county, east of and including Plains and Kingston townships.

"Fourth. The remaining portion of the Wyoming coal field west of Plains and Kingston townships, including the city of Wilkes-Barre and the boroughs of Kingston and Edwardsville.

"Fifth. That part of Luzerne county lying south of the Wyoming coal field together with Carbon county.

"Sixth. That part of the Schuylkill coal field in Schuylkill county lying north of the Broad Mountain and east of a meridian line through the center of the borough of Girardville.

"Seventh. That part of the Schuylkill coal field in Schuylkill county lying north of the Broad Mountain and west of a meridian line through the center of the borough of Girardville, together with Columbia, Northumberland and Dauphin counties.

"Eighth. All that part of the Schuylkill coal field in Schuylkill county lying south of the Mahanoy Valley, and the county of Lebanon.

"Section 3. In order to fill any vacancy that may occur in the office of Inspector of Mines by reason of expiration of term, resignation, removal for cause, or from any other reason whatever, the judges of the court of Lackawanna county shall appoint an examining board for the counties of Susquehanna, Wayne and Lackawanna, and the judges of the court of Luzerne county shall appoint an examining board for the counties of Sullivan, Carbon and Luzerne, and the judges of Schuylkill county shall appoint an examining board for the counties of Schuylkill, Northumberland, Lebanon, Columbia and Dauphin.

Section 4. The said Board of Examiners shall be composed of three reputable coal miners in actual practice and two reputable mining engineers, all of whom shall be appointed at the first term of court in each year, to hold their places during the year. Any vacancies that may occur in the Board of Examiners shall be filled by the court as they occur. The said Board of Examiners shall be permitted to engage the services of a clerk, and they, together with the clerk, shall each receive the sum of five dollars per day for every day they are actually engaged in the discharge of their duties under this appointment, and mileage at the rate of six cents per mile from their home to the place of meeting and return by the nearest practicable railway route.

"Section 5. Whenever candidates for the office of Inspector are to be examined, the said examiner shall give public notice of the fact in not more than five papers published in the inspection district, and at least two weeks before the meeting, specifying the time and place where such meeting shall be held. The said examiners shall be sworn to a faithful discharge of their duties, and four of them shall agree in their recommendation of all candidates to the Governor who have answered ninety per centum of the questions; the names of the applicants, the questions asked and answered thereto shall be sent to the Secretary of the Commonwealth, and published in at least two local papers, daily or weekly, and shall recommend only such applicants as they find qualified for the office.

"Should the Board of Examiners not be able to agree in their selection and recommendation of a candidate, the judges of the court of common pleas shall dissolve the said board, and appoint a new board of like qualifications and powers.

"Upon the recommendation of the Board of Examiners as aforesaid, the Governor shall appoint such person or persons to fill the office of inspector of mines under this act, and shall issue to him a commission for the term of five years, subject, however, to removal for neglect of duty or malfeasance in office, as hereinafter provided for.

"Section 6. The person so appointed must be a citizen of Pennsylvania and shall have attained the age of thirty years. He must have a knowledge of the different systems of working coal mines, and he must produce satisfactory evidence to the Board of Examiners of having had at least five (5) years practical experience in anthracite coal mines of Pennsylvania. He must have had experience in coal mines where noxious and explosive gases are evolved.

"Before entering upon the duties of his office he shall take an oath or affirmation before an officer properly qualified to administer the same, that he will perform his duties with fidelity and impartiality; which oath or affirmation shall be filed in the office of the prothonotary of the county. He shall also provide himself with the most modern instruments and appliances for carrying out the intentions of this act.

"Section 7. The salary of each of the said inspectors shall be three thousand dollars per annum, which salary, together with the expenses incurred in carrying into effect the provisions of this act, shall be paid by the State Treasurer out of the Treasury of the Commonwealth upon the warrant of the Auditor General.

"Section 8. In case the inspector becomes incapacitated to perform the duties of his office for a longer period than two weeks, it shall be the duty of the judges of the court of common pleas to deputize some competent person recommended by the board of examiners to fill the office of inspector, until the said inspector shall be able to fulfil the duties of his office, and the person so appointed shall be paid in the same manner as is provided for the inspector of mines.

"Section 9. Each of the said inspectors shall reside in the district for which he is appointed, and shall give his whole time and attention to the duties of the office. He shall examine all the collieries in his district as often as his duties will permit or as often as the exigencies of the case or the condition of the mines require it; see that every necessary precaution is taken to secure the safety of the workmen and that the provisions of this act are observed and obeyed; attend every inquest held by the coroner, or his deputy, upon the bodies of persons killed in or about the collieries in his district; visit the scene of the accident for the purpose of making an examination into the particulars of the same whenever loss of life or serious personal injury occurs, as elsewhere herein provided for, and make an annual report of his proceedings to the Secretary of Internal Affairs of the Commonwealth at the close of every year, enumerating all the accidents in and about the collieries of his district, marking in tabular form those accidents causing death or serious personal injury, the condition of the workings of the said mines with regard to the safety of the workmen therein, and the ventilation thereof, and the result of his labors generally shall be fully set forth.

"Section 10. The Board of Examiners, each for its respective district as hereinbefore provided for, in order to divide more equitably among the several mine inspectors the labor to be performed of the duties of the office, may, at any time, when they shall deem it desirable or necessary, readjust the several districts by the creation of new boundary lines, thereby adding to or taking from, as the case may be, the districts as at present bounded and described, if the court having jurisdiction approve the same.

"And in case it shall be deemed desirable or necessary to readjust any contiguous district, comprised by more than one judicial district, by the creation of new boundary lines, then in such case the examining boards of the territory affected or requiring such adjustment shall, in joint session, make such change or readjustment as they shall jointly agree upon, if the nearest court having jurisdiction to the territory affected to whom the said joint examining boards shall submit the matter, shall approve the same.

"Section 11. The mine inspector shall have the right and it is hereby made his duty, to enter, inspect and examine any mine or colliery in his district and the workings and machinery belonging thereto, at all reasonable times, either by day or night, but not so as to impede or obstruct the working of the colliery, and shall have power to take one or more of his fellow inspectors into or around any mine or colliery in the district for which he is appointed, for the purpose of consultation or examination.

"He shall also have the right, and it is hereby made his duty, to make inquiry into the condition of such mine or colliery workings, machinery, ventilation, drainage, method of lighting or using lights and into all matters and things connected with or relating to, as well as to make suggestions providing for the health and safety of persons employed in or about the same ,and especially to make inquiry whether the provision of this act have been complied with.

"The owner, operator or superintendent of such mine or colliery is hereby required to furnish the means necessary for such entry, inspection, examination, inquiry and exit.

"The inspector shall make record of the visits, noting the time and material circumstances of the inspection.

"Section 12. No person who shall act or practice as a land agent or as a manager or agent of any coal mine or colliery, who is pecuniarily interested in operating any coal mine or colliery in his district, shall, at the same time, hold the office of Inspector of Mines under this act.

"Section 13. Whenever a petition signed by fifteen or more reputable coal operators or miners, or both, setting forth any inspector of mines neglects his duties, or is incompetent, or is guilty of malfeasance in office, it shall be the duty of the court of common pleas of the Commonwealth to the said inspector to appear at not less than five days notice, on a day fixed, before said court and the court shall then proceed to inquire into and investigate the allegations of the petitioners. If the court find that the said inspector is neglectful of his duties or that his is incompetent to perform the duties of the office for any cause that existed previous to his appointment or that has arisen since his appointment or that he is guilty of malfeasance in office, the court shall certify the same to the Governor of the Commonwealth, who shall shall declare the office of inspector for the district vacant and proceed, in compliance with the provisions of this act, to appoint a properly qualified person to fill the office.

"The cost of said investigation shall be borne by the removed inspector; but if the allegations in the petition are not sustained the costs shall be paid by the petitioners.

"Section 14. The maps and plans of the mines and the records thereof, together with all the papers relating thereto, shall be kept by the inspector, properly arranged and preserved, in a convenient place in the district for which each inspector has been appointed, and shall be transferred by him, with any other property of the Commonwealth that may be in his possession, to his successor in office.

"Section 15. The persons who, at the time this act goes into effect, are acting as inspectors of mines under the acts hereby repealed shall continue to act in the same manner as if they had been appointed under this act, until the term for which they were appointed has expired," be amended so as to read as follows:

ARTICLE II.

Inspectors and Inspection Districts.

Section 1. The counties of Luzerne, Lackawanna, Carbon, Schuylkill, Northumberland and Columbia, shall be divided into six inspection districts, as follows:

Section 2. First district—The county of Luzerne.

Second district—The county of Lackawanna.

Third district—The county of Carbon.

Fourth district—The county of Schuylkill.

Fifth district—The county of Northumberland.

Sixth district—The county of Columbia.

Section 3. In order to fill any vacancy that may occur in the office of Inspector of Mines by reason of the expiration of term, resignation, removal for cause or from any other reason whatever, the judges of the court of Lackawanna county shall appoint an examining board for the county of Lackawanna, and the judges of the court of Luzerne county shall appoint an examining board for the counties of Carbon and Luzerne, and the judges of Schuylkill county shall appoint an examining board for the counties of Schuylkill, Northumberland and Columbia.

Section 4. The said Board of Examiners shall be composed of three reputable coal miners in actual practice and two reputable mining engineers, all of whom shall be appointed at the first term of court in each year, to hold their places during the year. Any vacancies that may occur in the Board of Examiners shall be filled by the court as they occur. The said Board of Examiners shall be permitted to engage the services of a clerk, and they, together with the clerk shall each receive the sum of five (5) dollars per day for every day they are actually engaged in the discharge of their duties under this appointment, and mileage at the rate of six cents per mile from their home to the place of meeting and return, by the nearest practicable railway route.

Section 5. Whenever candidates for the office of Inspector are to be examined, the said examiner shall give public notice of the fact in not more than five newspapers published in the inspection district, and at least two weeks before the meeting, specifying the time and place where such meeting shall be held. The said examiners shall be sworn to a faithful discharge of their duties, and at least four of them shall sign a certificate, setting forth the fact of the applicants having passed a successful examination ,and who have answered ninety per centum of the questions; the names of the applicants, the questions asked and answered thereto, shall be sent to the Secretary of the Commonwealth, and published in at least two papers, daily or weekly, and shall give such certificate to only such applicant as has passed the required examination.

Section 6. The said Board of Examiners shall hold at least one such examination during each year, at least six months before the date of the general election, in the month of November of each year.

Section 7. At the next general election in November, the qualified voters of the first inspection district shall elect five qualified persons to act as Mine Inspectors of this Commonwealth; the qualified voters of the second inspection district shall elect four qualified persons to act as Mine Inspectors of this Commonwealth; the qualified voters of the third inspection district shall elect one qualified person to act as Mine Inspector of this Commonwealth; the qualified voters of the fourth inspection district shall elect four qualified persons to act as Mine Inspectors of this Commonwealth; the qualified voters of the Fifth Inspection district shall elect one qualified person to act as Mine Inspector of this Commonwealth: Provided, That the present Mine Inspectors in the several inspection districts shall continue in office until the expiration of the terms for which they have been appointed, and the number of inspectors to be elected at the coming election shall be reduced by the number of Inspectors now regularly appointed and serving in said districts. When the terms of the present Inspectors shall expire, their successors shall be elected in accordance with the provisions of this act. At the said first election under this act in November, Anno Domini one thousand nine hundred and two, for said Inspectors, the qualified electors of the First Inspection District shall elect two Inspectors; the qualified electors of the Second Inspection district shall elect two Inspectors; the qualified electors of the Fourth Inspection district shall elect two Inspectors; the qualified electors of the Fifth Inspection district shall elect one Inspector, and the qualified electors of the Sixth Inspection district shall elect one Inspector. At the expiration of the term of office of any of the present Inspectors, who hold office under the appointment of the Governor of the Commonwealth, the qualified electors of the Third Inspection district shall elect one Inspector, and as further vacancies are caused by the expiration of the term of office of the present Inspectors, the qualified electors of the several inspection districts shall elect Inspectors to take their places, beginning with the First Inspection district, then the Second Inspection district, Third Inspection district, Fourth Inspection district, Fifth Inspection district and Sixth Inspection district, until each inspection district has its full quota of elected inspectors under this act. Said Inspectors, elected under this act, shall be under the directions of the Chief of the Bureau of Mines, who shall assign districts to the several Inspectors in the respective counties in which they are elected.

Section 8. Candidates for the office of Mine Inspector shall file with the county commissioners a certificate from the mine examining board, as above set forth, before their names shall be allowed to go upon the ballot as provided by the county commissioners for the general election; and the name of no person shall be placed upon the official ballot except such as has filed the certificate as herein required; and no person shall be qualified to act as such Mine Inspector unless such certificate has been previously filed with the county commissioners of his county.

Section 9. The person so elected must be a citizen of Pennsylvania and shall have attained the age of thirty years. He must have a knowledge of the different systems of work in coal mines, and he must produce satisfactory evidence to the Board of Examiners of having had at least five years practical experience in anthracite coal mines of Pennsylvania. He must have had experience in coal mines where noxious and explosive gases are evolved.

Before entering upon the duties of his office he shall take an oath or affirmation, before an officer properly qualified to administer the same, that he will perform his duties with fidelity and impartiality; which oath or affirmation shall be filed in the office of the prothonotary of the county. He shall provide himself with the most modern instruments and appliances for carrying out the intentions of this act.

Section 10. The salary of each of the said Inspectors shall be three thousand dollars per annum, which salary, together with the expenses incurred in carrying into effect the provisions of this act, shall be paid by the State Treasurer out of the Treasury of the Commonwealth upon the warrant of the Auditor General.

Section 11. Each of the said Inspectors shall hold said office for a term of three years from the first Monday of January immediately succeeding his election to said office, and until his successor is duly elected and qualified.

Section 12. It shall be the duty of the Chief of Bureau of Mines and Mining to direct one or more of the Inspectors who shall be elected under this act, and it shall be the duty of said Inspectors to obey said orders of the said Chief of Bureau of Mines and Mining, to inspect such collieries as come under the act to which this act is an amendment in counties not mentioned in this amendment to said act, in such manner and at such times as is required by law, and the inspectors inspecting said collieries shall make and include in his return a due report of said inspection.

Section 13. In case of death, resignation, removal from office, or other vacancies in the office of Mine Inspector before the expiration of said term of office, the judges of the court of common pleas of the county in which said vacancy occurs shall appoint a duly qualified person to fill said vacancy for the unexpired term. Said appointee to be one of the persons having filed with the county commissioners of said county a certificate from the Board of Examiners, showing he passed a successful examination before the said Board, and is duly qualified as hereinbefore mentioned.

Section 14. In case the Inspector becomes incapacitated to perform the duties of his office for a longer period than two weeks, it shall be the duty of the judges of the court of common pleas of the county from which said Inspector was elected to deputize some competent person, recommended by the Board of Examiners, to fill the office of Inspector until the said Inspector shall be able to fulfil the duties of his office, and the person so appointed shall be paid in the same manner as is provided for the Inspector of Mines.

Section 15. Each of the said Inspectors shall reside in the district for which he is elected, and shall give his whole time and attention to the duties of his office. He shall examine all the collieries in his district at least once every two months, as often in addition thereto as the necessities of the case or the condition of the mines require. He shall see that every necessary precaution is taken to secure the safety of the workmen and that the provisions of this act are observed and obeyed; and he shall personally visit each working face, and see that the air-current is carried to the working faces and is of sufficient quantity or volume to thoroughly ventilate the places. He shall every three months make a report of the condition of each working face in each colliery, on a form to be furnished to the inspectors by the Chief of the Bureau of Mines and Mining, designating the gangway in which the working is situated, and the breast number of said working and their condition shall be designated by the words good, fair, or bad, as the circumstances may warrant; and the said report, or a duplicate, shall be placed in a weather and dust-proof case, with a glass front; said case to be furnished by the operator, and placed in a conspicuous place at each mine opening, shaft, slope or drift, so that the workmen have easy access thereto. He shall certify in said report that the employes are hoisted to the surface of the ground or given access thereto according to law; he shall attend every inquest held by the coroner or his deputy upon the bodies of persons killed in or about the collieries in his district; he shall visit the scene of the accident, for the purpose of making an examination into the particulars of the same, wherever loss of life or serious personal injury occurs, as elsewhere herein provided for, and make an annual report of his proceedings to the Secretary of Internal Affairs of the Commonwealth at the close of every year, enumerating all the accidents in and about the collieries in his district, marking in tabular form those accidents causing death or serious personal injury, the condition of the workings of the said mines with regard to the safety of the workmen therein and the ventilation thereof, and the results generally shall be fully set forth; and such other duties as now are or hereafter may be required by law.

Section 16. The nomination and election of said mine inspectors shall be under the general election laws of this Commonwealth.

Section 17. The Mine Inspector shall have the right, and it is hereby made his duty, to enter, inspect and examine any mine or colliery in the territory allotted to him and the workings and machinery belonging thereto, at all reasonable times, either by day or by night, but not so as to obstruct or impede the working of the colliery, and shall have power to take one or more of his fellow inspectors into or around any mine or colliery in the territory allotted to him, for the purpose of consultation or examination.

He shall also have the right, and it is hereby made his duty, to make inquiry into the condition of such mine or colliery workings, machinery, ventilation, drainage, method of lighting or using lights, and into all matters and things connected with or relating to, as well as to make suggestions providing for, the health and safety of persons employed in or about the same, and especially to make inquiry whether the provisions of this act have been complied with.

The owner, operator or superintendent of such mine or colliery is hereby required to furnish the means necessary for such entry, inspection, examination, inquiry and exit.

The inspector shall make a record of the visit, noting the time and material circumstances of the inspection.

Section 18. No person who shall act or practice as a land agent or as a manager or agent of any coal mine or colliery, who is pecuniarly interested in operating any coal mine or colliery, shall at the same time hold the office of Inspector of Mines under this act.

Section 19. Whenever a petition signed by fifty or more reputable coal miners, or by fifteen or more reputable coal operators, or more, or both, setting forth that any inspector of mines neglect his duties, or is incompetent, or is guilty of malfeasance in office, it shall be the duty of the court of common pleas from which said Inspector was elected to issue a citation, in the name of the Commonwealth, to the said Inspector to appear at not less than five days' notice, on a day fixed, before said court, and the court shall then proceed to inquire into and investigate the allegations of the petitioners. If the court finds that the said Inspector is neglectful of his duties, or is incompetent to perform the duties of his office for any cause that existed previous to his election, or that has arisen since his election, or that he is guilty of malfeasance in office, the court shall declare the said Inspector removed from office and proceed to fill the vacancy. The cost of said investigation shall be borne by the removed Inspector; but if the allegations in the petition are not sustained, the cost shall be paid by the Treasurer of this Commonwealth upon warrant of the Auditor General, or by the petitioners in case the court finds that there was no probable ground for said charge.

Section 20. The maps and plans of the mines and the records thereof, together with all the papers relating thereto, shall be kept by the Inspector, properly arranged and preserved, in a convenient place in the territory to which the inspector has been allotted, and shall be transferred by him, with any other property of the Commonwealth that may be in his possession, to his successor in office.

Section 21. This act shall go into effect from the first day of January, Anno Domini one thousand nine hundred and two.

Section 22. All acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

Approved—The 8th day of June, A. D. 1901.

WILLIAM A. STONE.

Bituminous Mining Laws.

LAWS RELATING TO COAL MINING.

AN ACT

To protect miners in the bituminous coal region of the Commonwealth.

Section 1. Be it enacted, &c., That after the period of three months from the passage of this act, any miner employed by an individual, firm or corporation for the purpose of mining coal shall be entitled to receive from his employer, and failing to receive then to collect, by due process of law, at such rates as may have been agreed upon between the employer and the employed, full and exact wages accruing to him for the mining of all sizes of merchantable coal so mined by him, whether the same shall exist in the form of nut or lump coal; and in the adjudication of such wages seventy-six pounds shall be deemed one bushel, and two thousand pounds net, shall be deemed one ton of coal: Provided, That nothing contained in this act shall be construed to prevent operators and miners contracting for any method of measuring and screening the coal mined by such miners, as they may contract for.

Section 2. That at every bituminous coal mine in this Commonwealth, where coal is mined by measurement, all cars, filled by miners or their laborers, shall be uniform in capacity at each mine; no unbranded car or cars shall enter the mine for a longer period than three months, without being branded by the mine inspector of the district, wherein the mine is situated; and any owner or owners, or their agents, violating the provisions of this section, shall be subject to a fine of not less than one dollar per car for each and every day as long as the car is not in conformity with this act, and the mine inspector of the district, where the mine is located, on receiving notice from the check-master or any five miners working in the mine, that a car or cars are not properly branded, or not uniform in capacity according to law, are used in the mine where he or they are employed, then inside of three days from the date of receiving said notice, it shall be his duty to enforce the provisions of this section, under penalty of ten dollars for each and every day he permits such car or cars to enter the mine: Provided, That nothing contained in this section shall be construed or applied to those mines which do not use more than ten cars.

Section 3. That at every bituminous coal mine in this Commonwealth, where coal is mined by weight or measure, the miners or a majority of those present at a meeting called for that purpose, shall have the right to employ a competent person as check-weighman, or check-measurer as the case may require, who shall be permitted at all times to be present at the weighing or measurement of coal, also have power to weigh or measure the same, and during the regular working hours to have the privilege to balance and examine the scales, or measure the cars: Provided, That all such balancing or examination of scales shall only be done in such way, and in such time, as in no way to interfere with the regular working of the mines. And he shall not be considered a trespasser during working hours while attending to the interests of his employers. And in no manner shall he be interfered with or intimidated by any person, agent, owner or miner. And any person violating these provisions shall be held and deemed guilty of a misdemeanor, and upon conviction thereof, he shall be punished by a fine of not less than twenty dollars, and not exceeding one hundred dollars, or imprisonment at the discretion of the court. It shall be a further duty of check-weighman or check-measurer to credit each miner with all merchantable coal mined by him, on a proper sheet or book to be kept by him for that purpose. When differences arise between the check-weighman or check-measurer and the agent or owners of the mine, as to the uniformity, capacity or correctness of scales or cars used, the same shall be referred to the mine inspector of the district where the mine is located, whose duty it shall be to regulate the same at once, and in the event of said scales or cars proving to be correct, then the party or parties applying for the testing thereof to bear all costs and expenses thereof; but if not correct then the owner or owners of said mine to pay the cost and charges of making said examination: Provided further, That should any weighman or weighmen, agent or check-measurer, whether employed by operators or miners, knowingly or willfully adopt or take more or less pounds for a bushel or ton than is provided for in the first section of this act, or willfully neglect the balancing or examining of the scales or cars, or knowingly and willfully weigh coal with an incorrect scale, he shall be guilty of a misdemeanor, and upon conviction thereof, shall be imprisoned in the county jail for three months.

Section 4. All acts or parts of acts inconsistent with this act are hereby repealed.

Approved—The 1st day of June, A. D. 1883.

ROBT. E. PATTISON.

AN ACT

Relating to bituminous coal mines and providing for the lives, health, safety and welfare of persons employed therein.

ARTICLE I.

Survey—Maps and Plans.

Section 1. Be it enacted, &c., That the operator or superintendent of every bituminous coal mine shall make, or cause to be made by a competent mining engineer or surveyor, an accurate map or plan of such coal mine, not smaller than on a scale of two hundred feet to an inch, which map shall show as follows:

First. All measurements of said mine in feet or decimal parts thereof.

Second. All the openings, excavations, shafts, tunnels, slopes, planes, main-entries, cross-entries, rooms, et cetera, in proper numerical order in each opened strata of coal in said mine.

Third. By darts or arrows made thereon by a pen or pencil the direction of air currents in said mine.

Fourth. An accurate delineation of the boundary lines between said coal mine and all adjoining mines or coal lands, whether owned or operated by the same operator or other operator, and the relation and proximity of the workings of said mine to every other adjoining mine or coal lands.

Fifth. The elevation above mean tide at Sandy Hook of all tunnels, and entries, and of the face of working places adjacent to boundary lines at points not exceeding three hundred feet apart.

Sixth. The bearings and lengths of each tunnel or entry, and of the boundary or property lines. The said map or plan, or a true copy thereof, shall be kept in the general mine office by the said operator or superintendent for use of the mine inspectors and for the inspection of any person or persons working in said mine whenever said person or persons shall have cause to fear that any working place is becoming dangerous by reason of its proximity to other workings that may contain water or dangerous gas.

Section 2. At least once in every six months, or oftener if necessary, the operator or superintendent of each mine shall cause to be shown accurately on the map or plan said coal mine, all the excavations made therein during the time elapsing since such excavations were last shown upon said map or plan; and all parts of said mine which were worked out or abandoned during said elapsed period of time shall be clearly indicated by colorings on said map or plan, and whenever any of the workings or excavations of said coal mine have been driven to their destination, a correct measurement of all such workings or excavations shall be made promptly and recorded in a survey book prior to the removal of the pillars or any part of the same from such workings or excavations.

Section 3. The operator or superintendent of every coal mine shall, within six months after the passage of this act, furnish the mine inspector of the district in which said mine is located with a correct copy on tracing muslin or sun print, of the map or plan of said mine hereinbefore provided for. And the inspector of the district shall, at the end of each year or twice a year if he requires it, forward said map or plan to the proper person at any particular mine, whose duty it shall be to place or cause to be placed on said map or plan all extensions and worked out or abandoned parts of the mine during the preceding six or twelve months, as the case may be, and return the same to the mine inspector within thirty days from the time of receiving it. The copies of the maps or plans of the several coal mines of each district as hereinbefore required to be furnished to the mine inspector shall remain in the care of the inspector of the district in which the said mines are situated, as official records, to be transferred by him to his successor in office; but it is provided that in no case shall any copy of the same be made without the consent of the operator or his agent.

Section 4. If any superintendent or operator of mines shall neglect or fail to furnish to the mine inspector any copies of maps or plans as hereinbefore required by this act, or if the mine inspector shall believe that any map or plan of any coal mine made or furnished in pursuance of the provisions of this act is materially inaccurate or imperfect, then, in either case, the mine inspector is hereby authorized to cause a correct survey and map or plan of said coal mine to be made at the expense of the operator thereof, the cost of which shall be recoverable from said operator as other debts are recoverable by law: Provided, however, That if the map or plan which may be claimed by the mine inspector to be inaccurate shall prove to be correct, then the Commonwealth shall be liable for the expense incurred by the mine inspector in causing to be made said test survey and map, and the cost thereof, ascertained by the Auditor General by proper vouchers and satisfactory proof, shall be paid by the State Treasurer upon warrants which the said Auditor General is hereby directed to draw for the same.

ARTICLE II.

Section 1. It shall not be lawful for the operator, superintendent or mine foreman of any bituminous coal mine to employ more than twenty persons within said coal mine, or permit more than twenty persons to be employed therein at any one time unless they are in communication with at least two available openings to the surface from each seam or stratum of coal worked in such mine, exclusive of the furnace upcast shaft or slope: But provided, That in any mine operated by shaft or slope and ventilated by a fan, if the air shaft shall be divided into two compartments, one of them may be used for an air-way and the other for the purpose of egress and ingress from and into said mine by the persons therein employed and the same shall be considered a compliance with the provisions of this section hereinbefore set forth. And there shall be cut out or around the side of every hoisting shaft, or driven through the solid strata at the bottom thereof, a traveling way not less than five feet high and three feet wide to enable persons to pass the shaft in going from one side of it to the other without passing over or under the cage or other hoisting apparatus.

Section 2. The shaft or outlet, other than the main shaft or outlet shall be separated from the main outlet and from the furnace shaft by natural strata at all points by a distance of not less than one hundred and fifty feet (except in all mines opened prior to June thirtieth, one thousand eight hundred and eighty-five, where such distances may be less, if in the judgment of the mine inspector one hundred and fifty feet is impracticable). If the mine be worked by drift, two openings exclusive of the furnace upcast shaft and not less than thirty feet apart, shall be required (except in drift mines opened prior to June thirtieth, one thousand eight hundred and eighty-five, where the mine inspector of the district shall deem the same impracticable). Where the two openings shall not have been provided as required hereinbefore by this act, the mine inspector shall cause the second to be made without delay; and in no case shall furnace ventilation be used where there is only one opening into the mine.

Section 3. Unless the mine inspector shall deem it impracticable, all mines shall have at least two entries or other passage ways, one of which shall lead from the main entrance and the other from the opening into the body of the mine, and said two passageways shall be kept well drained and in a safe condition for persons to travel therein, throughout their whole length so as to obtain, in cases of emergency, a second way for egress from the workings. No part of said workings shall at any time be driven more than three hundred feet in advance of the aforesaid passageways, except entries, airways or other narrow work, but should an opening to the surface be provided from the interior of the mine, the passageways aforesaid may be made and maintained therefrom into the working part of the mine, and this shall be deemed sufficient compliance with the provisions of this act relative thereto; said two passageways shall be separated by pillars of coal or other strata of sufficient strength and width.

Section 4. Where necessary to secure access to the two passageways required in section three of article two of this act in any slope mine where the coal seam inclines and has workings on both sides of said slope, there shall be provided an overcast for the use of persons working therein, the dimensions of which shall not be less than four feet wide and five feet high. Said overcast shall connect the workings on both sides of said slope and the intervening strata between the slope and the overcast shall be of sufficient strength and thickness at all points for its purpose: Provided, That if said overcast be substantially constructed of masonry or other incombustible material it shall be deemed sufficient.

Section 5. When the opening or outlet, other than the main opening, is made and does not exceed seventy-five feet in vertical depth, it shall be set apart exclusively for the purpose of ingress to or egress from the mine by any person or persons employed therein it shall be kept in a safe and available condition and free from steam and dangerous gases, and all other obstructions, and if such opening is a shaft it shall be fitted with safe and convenient stairs with steps of an average tread of ten inches and nine inches rise, not less than two feet wide and to not exceed an angle of sixty degrees descent with landings of not less than eighteen inches wide and four feet long, at easy and convenient distances: Provided, That the requirements of this section shall not be applicable to stairways in use prior to June thirtieth, one thousand eight hundred and eighty-five, when in the judgment of the mine inspector, they are sufficiently safe and convenient. And water coming from the surface or out of the strata in the shaft shall be conducted away by rings, casing or otherwise and be prevented from falling upon persons who are ascending or descending the stairway of the shaft.

Section 6. Where any mine is operated by a shaft which exceeds seventy-five feet in vertical depth, the persons employed in said mine shall be lowered into and raised from said mine by means of machinery, and in any such mine the shaft, other than the main shaft, shall be supplied with safe and suitable machinery for hoisting and lowering persons, or with safe and convenient stairs for use in cases of emergency by persons employed in said mine: Provided, That any mine operated by two shafts, and where safe and suitable machinery is provided at both shafts for hoisting coal or persons, shall have sufficiently complied with the requirements of this section.

Section 7. At any mine, where one of the two openings required hereinbefore is a slope and is used as a traveling way, it shall not have a greater angle of descent than twenty degrees and may be of any depth.

Section 8. The machinery used for lowering or raising the employes into or out of the mine and the stairs used for ingress or egress, shall be kept in a safe condition, and inspected once each twenty-four hours by a competent person employed for that purpose. And such machinery and the method of its inspection shall be approved by the mine inspector of the district in which the mine is situated.

ARTICLE III.

Hoisting Machinery, Safety Catches, Signaling Apparatus, Et Cetera.

Section 1. The operator or superintendent shall provide and maintain, from the top to bottom of every shaft where persons are raised or lowered, a metal tube suitably adapted to the free passage of sound through which conversation may be held between persons at the top and bottom of said shaft, and also a means of signalling from the top to the bottom thereof, and shall provide every cage or gear carriage used for hoisting or lowering persons with a sufficient overhead covering to protect those persons when using the same, and shall provide also for each said cage or carriage a safety catch approved by the mine inspector. And the said operator or superintendent shall see that flanges, with a clearance of not less than four inches, when the whole of the rope is wound on the drum, are attached to the sides of the drum of every machine that is used for lowering and hoisting persons in and out of the mine, and also that adequate brakes are attached to the drum. At all shafts safety gates, to be approved by the mine inspector of the district shall be so placed as to prevent persons from falling into the shaft.

Section 2. The main coupling chain attached to the socket of the wire rope shall be made of the best quality of iron and shall be tested by weights or otherwise to the satisfaction of the mine inspector of the district where the mine is located, and bridle chains shall be attached to the main hoisting rope above the socket, from the top cross-piece of the carriage or cage, so that no single chain shall be used for lowering or hoisting persons into or out of the mines.

Section 3. No greater number of persons shall be lowered or hoisted at any one time than may be permitted by the mine inspector of the district, and notice of the number so allowed to be lowered or hoisted at any one time shall be kept posted up by the operator or superintendent in conspicuous places at the top and bottom of the shaft, and the aforesaid notice shall be signed by the mine inspector of the district.

Section 4. All machinery about mines from which any accident would be liable to occur shall be properly fenced off by suitable guard railing.

ARTICLE IV.

Section 1. The operator or superintendent of every bituminous coal mine, whether shaft, slope or drift, shall provide and hereafter maintain ample means of ventilation for the circulation of air through the main-entries, cross-entries and all other working places to an extent that will dilute, carry off and render harmless the noxious or dangerous gases, generated in the mine, affording not less than one hundred cubic feet per minute for each and every person employed therein; but in a mine where fire damp has been detected the minimum shall be one hundred and fifty cubic feet per minute for each person employed therein, and as much more in either case as one or more of the mine inspectors may deem requisite.

Section 2. After May thirtieth, one thousand eight hundred and ninety-four, not more than sixty-five persons shall be permitted to work in the same air current: Provided, That a larger number, not exceeding one hundred, may be allowed by the mine inspector where, in his judgment, it is impracticable to comply with the foregoing requirement; and mines where more than ten persons are employed, shall be provided with a fan, furnace or other artificial means to produce the ventilation, and all stoppings between main intake and return air-ways hereinafter built or replaced shall be substantially built with suitable material, which shall be approved by the inspector of the district.

Section 3. All ventilating fans shall be kept in operation continuously night and day, unless operations are indefinitely suspended, except written permission is given by the mine inspector of the district to stop the same, and the said written permission shall state the particular hours the said fan may not be in operation, and the mine inspector shall have power to withdraw or modify such permission as he may deem best, but in all cases the fan shall be started two hours before the time to begin work. When the fan may be stopped by permission of the mine inspector a notice printed in the various languages used by persons employed in the mine, stating at what hour or hours the fan will be stopped, shall be posted by the mine foreman in a conspicuous place at the entrance or entrances to the mine.

Said printed notices shall be furnished by the mine inspector and the cost thereof borne by the State: Provided, That should it at any time become necessary to stop the fan on account of accident or needed repairs to any part of the machinery connected therewith, or by reason of any other unavoidable cause, it shall then be the duty of the mine foreman or any other officials in charge, after first having provided, as far as possible for the safety of the persons employed in the mine, to order said fan to be stopped so as to make the necessary repairs or to remove any other difficulty that may have been the cause of its stoppage. And all ventilating furnaces in mines shall, for two hours before the appointed time to begin work and during working hours, be properly attended by a person employed for that purpose. In mines generating fire-damp in sufficient quantities to be detected by ordinary safety lamps, all main air bridges or overcasts made after the passage of this act shall be built of masonry or other incombustible material of ample strength or be driven through the solid strata.

In all mines the doors used in guiding and directing the ventilation of the mine shall be so hung and adjusted that they will close themselves, or be supplied with spring or pulleys so that they cannot be left standing open, and an attendant shall be employed at all principal doors through which cars are hauled, for the purpose of opening and closing said doors when trips of cars are passing to and from the workings, unless an improved self-acting door is used, which principal doors shall be determined by the mine inspector or mine foreman. A hole for shelter shall be provided at each door so as to protect said attendant from being run over by the cars while attending to his duties, and persons employed for this purpose shall at all times remain at their post of duty during working hours: Provided, That the same person may attend two doors where the distance between them is not more than one hundred feet. On every inclined plane or road in any mine where haulage is done by machinery and where a door is used, an extra door shall be provided to be used in case of necessity.

ARTICLE V.

Safety Lamps, Fire Bosses, Et Cetera.

Section 1. All mines generating fire-damp shall be kept free of standing gas in all working places and roadways. No accumulation of explosive gas shall be allowed to exist in the worked out or abandoned parts of any mine when it is practicable to remove it, and the entrance or entrances to said worked out and abandoned places shall be properly fenced off, and cautionary notices shall be posted upon said fencing to warn persons of danger.

Section 2. In all mines wherein explosive gas has been generated within the period of six months next preceding the passage of this act, and also in all mines where fire-damp shall be generated, after the passage of this act, in sufficient quantities to be detected by the ordinary safety lamp, every working place without exception and all road ways shall be carefully examined immediately before each shift by competent person or persons appointed by the superintendent and mine foreman for that purpose. The person or persons making such examination shall have received a fire boss certificate of competency required by this act, and shall use no light other than that enclosed in a safety lamp while making said examination. In all cases said examination shall be begun within three hours prior to the appointed time of each shift commencing to work, and it shall be the duty of the said fire boss at each examination to leave at the face and side of every place so examined, evidence of his presence. And he shall also, at each examination, inspect the entrance or entrances to the worked out or abandoned parts which are adjacent to the roadways and working places of the mine where fire-damp is likely to accumulate, and where danger is found to exist he shall place a danger signal at the entrances to such places, which shall be sufficient warning for persons not to enter said place.

Section 3. In any place that is being driven towards or in dangerous proximity to an abandoned mine or part of a mine suspected of containing inflammable gases, or which may be inundated with water, bore holes shall be kept not less than twelve feet in advance of the face, and on the sides of such working places, said side holes to be drilled diagonally not more than eight feet apart, and any place driven to tap water or gas shall not be more than ten feet wide, and no water or gas from an abandoned mine or part of a mine and no bore holes from the surface, shall be tapped until the employes, except those engaged at such work, are out of the mine, and such work to be done under the immediate instruction of the mine foreman.

Section 4. The fire boss shall at each entrance to the mine or in the main intake air-way near to the mine entrance, prepare a permanent station with the proper danger signal designated by suitable letters and colors placed thereon, and it shall not be lawful for any person or persons, except the mine officials in cases of necessity, and such other persons as may be designated by them, to pass beyond said danger station until the mine has been examined by the fire boss as aforesaid and the same, or certain parts thereof, reported by him to be safe, and in all mines where operations are temporarily suspended the superintendent and mine foreman shall see that a danger signal be placed at the mine entrance or entrances, which shall be a sufficient warning to persons not to enter the mine, and if the ordinary circulation of air through the mine be stopped each entrance to said mine shall be securely fenced off and a danger signal shall be displayed upon said fence and any workman or other person, (except those persons hereinbefore provided for,) passing by any danger signal into the mine before it has been examined and reported to be safe as aforesaid, shall be deemed guilty of a misdemeanor and it shall be the duty of the fire boss, mine foreman, superintendent or any employe to forthwith notify the mine inspector, who shall enter proceedings against such person or persons as provided for in section two of article twenty-one of this act.

Section 5. All entries, tunnels, air ways, traveling ways and other working places of a mine where explosive gas is being generated in such quantities as can be detected by the ordinary safety lamp, and pillar workings and other working places in any mine where a sudden inflow of said explosive gas is likely to be encountered, (by reason of the subsidence of the overlying strata or from any other causes), shall be worked exclusively with locked safety lamps. The use of open lights is also prohibited in all working places, roadways or other parts of the mine through which fire-damp might be carried in the air current in dangerous quantities. In all mines or parts of mines worked with locked safety lamps the use of electric wires and electric currents is positively prohibited, unless said wires and machinery and all other mechanical devices attached thereto and connected therewith are constructed and protected in such a manner as to secure freedom from the emission of sparks or flame therefrom into the atmosphere of the mine.

Section 6. After January first, one thousand eight hundred and ninety-four, the use of the common Davy safety lamp for general work on any bituminous coal mine is hereby prohibited, neither shall the Clanny lamp be so used unless its gauze is thoroughly protected by a metallic shield, but this act does not prohibit the use of the Davy and Clanny lamps by the mine officials for the purpose of examining the workings for gas.

Section 7. All safety lamps used for examining mines or for working therein shall be the property of the operator, and shall be in the care of the mine foreman, his assistant or fire boss, or other competent person, who shall clean, fill, trim, examine and deliver the same, locked, in a safe condition to the men when entering the mine before each shift, and shall receive the same from the men at the end of each shift, for which service a charge not exceeding cost of labor and material may be made by the operator. A sufficient number of safety lamps, but not less than twenty-five per centum of those in use, shall be kept at each mine where gas has at any time been generated in sufficient quantities to be detected by an ordinary safety lamp, for use in case of emergency. It shall be the duty of every person who knows his safety lamp to be injured or defective, to promptly report such fact to the party authorized herein to receive and care for said lamps, and it shall be the duty of that party to promptly report such fact to the mine foreman.

ARTICLE VI.

Mine Foreman and His Duties.

Section 1. In order to better secure the proper ventilation of the bituminous coal mines and promote the health and safety of the persons employed therein, the operator or superintendent shall employ a competent and practical inside overseer for each and every mine, to be called mine foreman; said mine foreman shall have passed an examination and obtained a certificate of competency or of service as required by this act and shall be a citizen of the United States and an experienced coal miner, and said mine foreman shall devote the whole of his time to his duties at the mine when in operation, or in case of his necessary absence, an assistant, chosen by him and shall keep a careful watch over the ventilating apparatus, and the air ways, traveling ways, pump and pump timbers and drainage, and shall often instruct, and as far as possible, see that as the miners advance their excavations all dangerous coal, slate and rock overhead are taken down or carefully secured against falling therein, or on the traveling and hauling ways, and that sufficient props, caps and timbers of suitable size are sent into the mine when required, and all props shall be cut square at both ends, and as near as practicable to a proper length for the places where they are to be used, and such props, caps and timbers shall be delivered in the working places of the mine.

Section 2. Every workman in want of props or timbers and cap pieces shall notify the mine foreman or his assistant of the fact at least one day in advance, giving the length and number of props or timbers and cap pieces required, but in cases of emergency the timbers may be ordered immediately upon the discovery of any danger. (The place and manner of leaving the orders for the timber shall be designated and specified in the rules of the mine.) And if, from any cause, the timbers cannot be supplied when required, he shall instruct the persons to vacate all said working places until supplied with the timber needed, and shall see that all water be drained or hauled out of all working places before the miner enters and as far as practicable kept dry while the miner is at work.

Section 3. It shall be the duty of the mine foreman to see that proper cut-throughs are made in all the room pillars at such distances apart as in the judgment of the mine inspector may be deemed requisite, not more than thirty-five nor less than sixteen yards each, for the purpose of ventilation, and the ventilation shall be conducted through said cut-through into rooms by means of check doors made of canvas or other suitable material, placed on the entries, or in other suitable places, and he shall not permit any room to be opened in advance of the ventilating current. Should the mine inspector discover any room, entry, air-way or other working places being driven in advance of the air current contrary to the requirements of this section, he shall order the workmen working in such places to cease work at once until the law is complied with.

Section 4. In all hauling roads, on which hauling is done by animal power, and whereon men have to pass to and from their work, holes for shelter, which shall be kept clear of obstruction, shall be made at least every thirty yards and be kept whitewashed, but shelter holes shall not be required in entries from which rooms are driven at regular intervals not exceeding fifty feet, where there is a space four feet between the wagon and rib, it shall be deemed sufficient for shelter. On all hauling roads whereon hauling is done by machinery, and all gravity or inclined planes inside mines upon which the persons employed in the mine must travel on foot to and from their work, such shelter holes shall be cut not less than two feet six inches into the strata and not more than fifteen yards apart, unless there is a space of at least six feet from the side of the car to the side of the roadway, which space shall be deemed sufficient for shelter: Provided, That this requirement shall not apply to any parts of mines which parts were opened prior to the passage of this act if deemed impracticable by the mine inspector.

Section 5. The mine foreman shall measure the air current at least once a week at the inlet and outlet and at or near the faces of the entries, and shall keep a record of such measurements. An anemometer shall be provided for this purpose by the operator of the mine. It shall be the further duty of the mine foreman to require the workmen to use locked safety lamps when and where required by this act.

Section 6. The mine foreman shall give prompt attention to the removal of all dangers reported to him by the fire boss or any other person working in the mine, and in mines where a fire boss is not employed, the said mine foreman or his assistant shall visit and examine every working place therein at least once every alternate day while the miners of such place are or should be at work, and shall direct that each and every working place be properly secured by props or timbers, and that no person shall be directed or permitted to work in an unsafe place unless it be for the purpose of making it safe: Provided, That if the owner or operator of any mine employing a fire boss shall require the mine foreman to examine every working place every alternate day, then it shall be the duty of the mine foreman to do so.

Section 7. When the mine foreman is unable personally to carry out all the requirements of this act as pertaining to his duties, he shall employ a competent person or persons, not objectionable to the operator, to act as his assistant or assistants, who shall act under his instructions, and in all mines where fire-damp is generated the said assistant or assitants shall possess a certificate of competency as mine foreman or fire boss.

Section 8. A suitable record book, with printed head lines, prepared by and approved by the mine inspector, the same to be provided at the expense of the Commonwealth, shall be kept at each mine generating explosive gases, and immediately after each examination of the mine made by the fire boss or fire bosses, a record of the same shall be entered in said book, signed by the person or persons making such examinations, which shall clearly state the nature and location of any danger which he or they may have discovered, and the fire boss or fire bosses shall immediately report such danger and the location of the same to the mine foreman, whose duty it shall be to remove the danger, or to cause the same to be done forthwith as far as practicable, and the mine foreman shall also each day countersign all reports entered by the fire boss or fire bosses. At all mines the mine foreman shall enter in a book provided as above by the mine inspector, a report of the condition of the mine, signed by himself, which shall clearly state any danger that may have come under his observation during the day, and shall also state whether he has a proper supply of material on hand for the safe working of the mine, and whether all requirements of the law are strictly complied with. He shall, once each week, enter or cause to be entered, plainly, with ink, in said book, a true record of all air measurements required by this act, and such books shall at all times, be kept at the mine office for examination by the mine inspector of the district and any other person working in the mines.

ARTICLE VII.

Timber and Other Mine Supplies, Et Cetera.

Section 1. It shall be the duty of the superintendent, on behalf and at the expense of the operator to keep on hand at the mines at all times, a full supply of all materials and supplies required to preserve the health and safety of the employes as ordered by the mine foreman and required by this act. He shall at least once a week, examine and countersign—(which countersignature of the superintendent shall be held, under this act to have no further bearing than the evidence of the fact that the mine superintendent has read the matter entered on the book)—all reports entered in the mine record book, and if he finds that the law is being violated in any particular, he shall order the mine foreman to comply with its provisions forthwith. If from any cause he cannot procure the necessary supplies or materials as aforesaid, he shall notify the mine foreman, whose duty it shall be to withdraw the men from the mine or part of mine until such supplies or materials are received.

Section 2. The superintendent of the mine shall not obstruct the mine foreman or other officials in their fulfillment of any of the duties required by this act. At mines where superintendents are not employed, the duties that are herein prescribed for the superintendent shall devolve upon the mine foreman.

ARTICLE VIII.

Steam Boilers, Stables, Regulations for the Use of Oil, Powder, Et Cetera.

Section 1. After the passage of this act it shall be unlawful to place a main or principal ventilating fan shed inside of any bituminous coal mine wherein explosive gas has been detected or in which the air current is contaminated with coal dust. No stationery steam boiler shall be placed in any bituminous coal mine, unless said steam boiler be placed within fifty feet from the bottom of an up-cast shaft, which shaft shall not be less than twenty-five square feet in area, and after May thirtieth, one thousand eight hundred and ninety-five, no stationary steam boiler shall be permitted to remain in any bituminous coal mine, only as aforesaid.

Section 2. It shall not be lawful after the passage of this act to provide any horse or mule stables inside of bituminous coal mines, unless said stables are excavated in the solid strata or coal seams, and no wood or other combustible material shall be used excessively in the construction of said stables, unless surrounded by or incased by some incombustible material. The air current used for ventilating said stable shall not be intermixed with the air current used for ventilating the working parts of the mine, but shall be conveyed directly to the return air current, and no open light shall be permitted to be used in any stable in any mine.

Section 3. No hay or straw shall be taken into any mine, unless pressed and made up into compact bales, and all hay or straw taken into the mines as aforesaid, shall be stored in a storehouse excavated in the solid strata or built in masonry for that purpose. After January first, one thousand eight hundred and ninety-four, no horse or mule stable or storehouse, only as aforesaid, shall be permitted in any bituminous coal mine.

Section 4. No explosive oil shall be used or taken into bituminous coal mines for lighting purposes, and oil shall not be stored or taken into the mines in quantities exceeding five gallons. The oiling or greasing of cars inside of the mines is strictly forbidden unless the place where said oil or grease is used is thoroughly cleaned at least once every day to prevent the accumulation of waste oil or grease on the roads or in the drains at that point. Not more than one barrel of lubricating oil shall be permitted in the mine at any one time. Only a pure animal or pure cotton-seed oil or oils, that shall be as free from smoke as pure animal or pure cotton-seed oil, shall be used for illuminating purposes in any bituminous mine. Any person found knowingly using explosive or impure oil, contrary to this section, shall be prosecuted as provided for in section two of article twenty-one of this act.

Section 5. No powder or high explosive shall be stored in any mine, and no more of either article shall be taken into the mine at any one time than is required in any one shift, unless the quantity be less than five pounds, and in all working places where locked safety lamps are used blasting shall only be done by the consent and in the presence of the mine foreman, his assistant or fire boss, or any competent party designated by the mine foreman for that purpose; whenever the mine inspector discovers that the air in any mine is becoming vitiated by the unnecessary blasting of the coal, he shall have the power to regulate the use of the same and to designate at what hour of the day blasting may be permitted.

ARTICLE IX.

Opening for Drainage, Et Cetera, on Other Lands.

Section 1. If any person, firm or corporation is or shall hereafter be seized in his or their own right of coal lands, or shall hold such lands under lease and shall have opened or shall desire to open a coal mine on said land, and it shall not be practicable to drain or ventilate such mines or to comply with the requirements of this act as to ways of ingress and egress or traveling ways by means of openings on lands owned or held under lease by him, them or it, and the same can be done by means of openings on adjacent lands, he, they or it may apply by petition to the court of quarter sessions of the proper county, after ten days' notice to the owner or owners, their agents or attorney, setting forth the facts under oath or affirmation particularly describing the place or places where such opening or openings can be made, and the pillars of coal or other material necessary for the support of such passageway and such right of way to any public road as may be needed in connection with such opening, and that he or they cannot agree with the owner or owners of the land as to the amount to be paid for the privilege of making such opening or openings, whereupon the said court shall appoint three disinterested and competent citizens of the county to view the ground designated and lay out from the point or points mentioned in such petition, a passage or passages not more than eighty feet area by either drift, shaft or slope, or by a combination of any of said methods by any practicable and convenient route to the coal of such person, firm or corporation, preferring in all cases an opening through the coal strata where the same is practicable. The said viewers shall, at the same time, assess the damages to be paid by the petitioner or petitioners to the owner or owners of such lands for the coal and other valuable material to be removed in the excavation and construction of said passage, also for such coal or other valuable material necessary to support the said passage, as well as for a right of way not exceeding fifteen feet in width from any such opening to any public road, to enable persons to gain entrance to the mine through such opening or to provide therefrom, upon the surface, a water course of suitable dimensions to a natural stream to enable the operator to discharge the water from said mine if such right of way shall be desired by the petitioner or petitioners, which damages shall be fully paid before such opening is made. The proceedings shall be recorded in the road docket of the proper county, and the pay of viewers shall be the same as in road cases; if exceptions be filed they shall be disposed of by the court as speedily as possible, and both parties to have the right to take depositions as in road cases. If, however, the petitioner desires to make such openings or roads or waterways before the final disposition of such exceptions, he shall have the right to do so by giving bond, to be aprpoved by the court securing the damages as provided by law in the case of lateral railroads.

Section 2. It shall be compulsory upon the part of the mine owner or operator to exercise the powers granted by the provisions of the last preceding section for the procuring of a right of way on the surface from the opening of a coal mine to a public road or public roads, upon the request in writing of fifty miners employed in the mine or mines of such owner or operator: Provided however, That with such request satisfactory security be deposited with the mine owner or operator by said petitioners, being coal miners, to fully and sufficiently pay all costs, damages and expenses caused by such proceedings and in paying for such right of way.

Section 3. In any mine or mines, or parts thereof, wherein water may have been allowed to accumulate in large and dangerous quantities, putting in danger the adjoining or adjacent mines and the lives of the miners working therein, and when such can be tapped and set free and flow by its own gravity to any point of drainage, it shall be lawful for any operator or person having mines so endangered, with the approval of the inspector of the district, to proceed and remove the said danger by driving a drift or drifts protected by bore holes as provided by this act, and in removing said danger it shall be lawful to drive across property lines if needful.

And it shall be unlawful for any person to dam or in any way obstruct the flow of any water from said mine or parts thereof, when so set free on any part of its passage to point of drainage.

Section 4. No operator shall be permitted to mine coal within fifty feet of any abandoned mine containing a dangerous accumulation of water, until said danger has been removed by driving a passage way so as to tap and drain off said water as provided for in this act: Provided, That the thickness of the barrier pillars shall be greater and shall be in proportion of one foot of pillar thickness to each one and one-quarter foot of waterhead if, in the judgment of the engineer of the property and that of the district mine inspector, it is necessary for the safety of the persons working in the mine.

Section 5. All operators of bituminous coal mines shall keep posted in a conspicuous place at their mines the general and special rules embodied in and made part of this act, defining the duties of all persons employed in or about said mine, which said rules shall be printed in the English language, and shall also be printed in such other language or languages as are used by any ten persons working therein. It shall be the duty of the mine inspector to furnish to the operator printed copies of such rules and such translations thereof as are required by this section, and to certify their correctness over his signature. The cost thereof shall be borne by the State.

ARTICLE X.

Inspectors, Examining Boards, Et Cetera.

Section 1. The board of examiners appointed to examine candidates for the office of mine inspectors under the provisions of the act to which this is a supplement, shall exercise all the powers granted, and perform all the duties required by this supplementary act, and at the expiration of their term of office, and every four years thereafter, the Governor shall appoint, as hereinafter provided, during the month of January, two mining engineers of good repute and three other persons, who shall have passed successful examinations qualifying them to act as mine inspectors or mine foremen in mines generating fire-damp, who shall be citizens of this Commonwealth and shall have attained the age of thirty years and shall have had at least five years of practical experience in the bituminous mines of Pennsylvania, and who shall not be serving at that time in any official capacity at mines, which five persons shall constitute a board of examiners whose duty it shall be to inquire into the character and qualification of candidates for the office of inspector of mines under the provisions of this act.

Section 2. The examining board, so constituted shall meet on the first Tuesday of March following their appointment, in the city of Pittsburgh, to examine applicants for the office of mine inspector: Provided, however, The examining board shall meet two weeks previous to the aforesaid time for the purpose of preparing questions, et cetera, and when called together by the Governor on extra occasions at such time and place as he may designate, and after being duly organized and having taken and subscribed before any officer authorized to administer the same the following oath, namely, "We, the undersigned, do solemnly swear (or affirm) that we will perform the duties of examiners of applicants for the appointment as inspectors of bituminous coal mines to the best of our abilities, and that in recommending or rejecting said applicant, we will be governed by the evidence of the qualifications to fill the position under the law creating the same, and not by any consideration of political or personal favor; and that we will certify all whom we may find qualified according to the true intent and meaning of the act and none others."

Section 3. The general examination shall be in writing and the manuscript and other papers of all applicants, together with the tally sheets and the solution of each question as given by the examining board, shall be filed with the Secretary of Internal Affairs as public documents, but each applicant shall undergo an oral examination pertaining to explosive gases and safety lamps, and the examining board shall certify to the Governor the names of all such applicants which they shall find competent to fill this office under the provisions of this act, which names, with the certificates and their percentages and the oaths of the examiners, shall be mailed to the Secretary of the Commonwealth and be filed in his office. No person shall be certified as competent whose percentage shall be less than ninety per centum, and such certificate shall be valid only when signed by four of the members of the examining board.

Section 4. The qualification of candidates for said office of inspectors of mines to be inquired into and certified by said examiners, shall be as follows, namely: They shall be citizens of Pennsylvania, of temperate habits, of good repute as men of personal integrity, and shall have attained the age of thirty years, and shall have had at least five years of practical experience in working of or in the workings of the bituminous mines of Pennsylvania immediately preceding their examination, and shall have had practical experience with fire-damp inside the mines of this country, and upon examination shall give evidence of such theoretical as well as practical knowledge and general intelligence respecting mines and mining and the working and ventliation thereof, and all noxious mine gases, and will satisfy the examiners of their capability and fitness for the duties imposed upon inspectors of mines by the provisions of this act. And the examining board shall immediately after the examination, furnish to each person who came before it to be examined, a copy of all questions whether oral or written, which were given at the examination on printed slips of paper and to be marked solved, right, imperfect or wrong, as the case may be, together with a certificate of competency to each candidate who shall have made at least ninety per centum.

Section 5. The board of examiners may, also at their meeting, or when at any time called by the Governor together for an extra meeting, divide the bituminous coal regions of the State into inspection districts, no district to contain less than sixty nor more than eighty mines, and as nearly as possible equalizing the labor to be performed by each inspector, and at any subsequent calling of the board of examiners this division may be revised as experience may prove to be advisable.

Section 6. The board of examiners shall each receive ten dollars per day for each day actually employed, and all necessary expenses, to be paid out of the State Treasury. Upon the filing of the certificate of the examining board in the office of the Secretary of the

Commonwealth, the Governor shall, from the names so certified, commission one person to be inspector of mines for each district as fixed by the examiners in pursuance of this supplementary act, whose commission shall be for a full term of four years from the fifteenth day of May following: Always provided however, The highest candidate or candidates in percentage shall have priority to be commissioned for a full term or unexpired term before those candidates of lower percentage, and in case of a tie percentage the oldest candidate shall be commissioned.

Section 7. As often as vacancies occur in said office of inspectors of mines, the Governor shall commission for the unexpired term from the names on file, the highest percentage in the office of the Secretary of the Commonwealth, until the number shall be exhausted, and whenever this may occur, the Governor shall cause the aforesaid board of examiners to meet, and they shall examine persons who may present themselves for the vacant office of mine inspector as herein provided, and the board of examiners shall certify to the Governor all persons who shall have made ninety per centum in said examination, one of whom to be commissioned by him according to the provisions of this act for the office of mine inspector for the unexpired term, and any vacancy that may occur in the examining board shall be filled by the Governor of this Commonwealth.

Section 8. Each inspector of mines shall receive for his services an annual salary of three thousand dollars and actual traveling expenses, to be paid quarterly by the State Treasurer upon warrant of the Auditor General, and each mine inspector shall keep an office in the district for which he is commissioned and he shall be permitted to keep said office at his place of residence: Provided, A suitable apartment or room be set off for that purpose. Each mine inspector is hereby authorized to procure such instruments, chemical tests and stationery and to incur such expenses of communication from time to time, as may be necessary to the proper discharge of his duties under this act at the cost of the State, which shall be paid by the State Treasurer upon accounts duly certified by him and audited by the proper department of the State.

Section 9. All instruments, plans, books, memoranda, notes and other material pertaining to the office shall be the property of the State, and shall be delivered to their successors in office. In addition to the expenses now allowed by law to the mine inspectors in enforcing the several provisions of this act, they shall be allowed all necessary expenses by them incurred in enforcing the several provisions of said law in the respective courts of the Commonwealth, the same to be paid by the State Treasurer on warrants drawn by the Auditor General after auditing the same; all such accounts presented by the mine inspector to the Auditor General shall be item-ized and first approved by the court before which the proceedings were instituted.

Section 10. Each mine inspector of bituminous coal mines shall, before entering upon the discharge of his duties, give bond in the sum of five thousand dollars, with sureties to be approved by the president judge of the district in which he resides, conditional for the faithful discharge of his duties, and take an oath or affirmation to discharge his duties impartially and with fidelity to the best of his knowledge and ability. But no person who shall act as manager or agent of any coal mine, or as mining engineer or is interested in operating any coal mine, shall, at the same time act as mine inspector of coal mines under this act.

Section 11. Each inspector of bituminous coal mines shall devote the whole of his time to the duties of his office. It shall be his duty to examine each mine in his district as often as possible, but a longer period of time than three months shall not elapse between said examination, to see that all the provisions of this act are observed and strictly carried out, and he shall make a record of all examinations of mines, showing the condition in which he finds them, especially with reference to ventilation and drainage, the number of persons employed in each mine, the extent to which the law is obeyed and progress made in the improvement of mines, the number of serious accidents and the nature thereof, the number of deaths resulting from injuries received in or about the mines with the cause of such accident or death, which record completed to the thirty-first day of December of each and every year, shall, on or before the fifteenth day of March following, be filed in the office of the Secretary of Internal Affairs, to be by him recorded and included in the annual report of his department.

Section 12. It shall be the duty of the mine inspector on examination of any mine, to make out a written, or partly written and partly printed report of the condition in which he finds such mine and post the same in the office of the mine or other conspicuous place. The said report shall give the date of the visit, the number of cubic feet of air in circulation and where measured, and that he has measured the air at the cut through one or more rooms in each heading or entry, and such other information as he shall deem necessary, and the said report shall remain posted in the office or conspicuous place for one year and may be examined by any person employed in or about the mine.

Section 13. In case the inspector becomes incapacitated to perform the duties of his office or receives a leave of absence from the same from the Governor, it shall be the duty of the judge of the court of common pleas of his district to appoint, upon said mine inspector's application or that five miners or five operators of said inspector's district, some competent person, recommended by the board of examiners to fill the office of inspector until the said inspector shall be able to resume the duties of his office, and the person so appointed shall be paid in the same manner as is hereinbefore provided for the inspector of mines.

ARTICLE XI.

Inspectors' Powers, Et Cetera.

Section 1. That the mine inspectors may be enabled to perform the duties herein imposed upon them, they shall have the right at all times to enter any bituminous coal mine to make examinations or obtain information, and upon the discovery of any violation of this act, they shall institute proceedings against the person or persons at fault under the provisions of section two of article twenty-one of this act. In case, however, where, in the judgment of the mine inspector of the district, any mine or part of mine is in such dangerous condition as to jeopardize life or health, he shall at once notify two of the mine inspectors of the other districts, whereupon they shall at once proceed to the mine where the danger exists and examine into the matter, and if, after full investigation thereof, they shall agree in the opinion that there is immediate danger, they shall instruct the superintendent of the mine in writing to remove such condition forthwith, and in case said superintendent shall fail to do so, then they shall apply, in the name of the Commonwealth, to the court of common pleas of the county, or in case the court shall not be in session, to a judge of the said court in chambers in which the mine may be located for an injunction to suspend all work in and about said mine, whereupon said court or judge shall at once proceed to hear, and determine speedily the same, and if the cause appear to be sufficient after hearing the parties and their evidences, as in like cases, shall issue its writ to restrain the working of said mine until all cause of danger is removed, and the cost of said proceedings shall be borne by the owner, lessee or agent of the mine: Provided, That if said court shall find the cause not sufficient, then the case shall be dismissed and the costs shall be borne by the county wherein said mine is located.

ARTICLE XII.

Inquests, Et Cetera.

Section 1. Whenever, by reason of any explosion or other accidents in any bituminous coal mine or the machinery connected therewith, loss of life or serious personal injury shall occur, it shall be the duty of the person having charge of such mine to give notice thereof forthwith to the mine inspector of the district and also to the coroner of the county, if any person is killed.

Section 2. If the coroner shall determine to hold an inquest, he shall notify the mine inspector of the district of time and place of holding the same, who shall offer such testimony as he may deem necessary to thoroughly inform the said inquest of the cause of the death, and the said mine inspector shall have authority at any time to appear before such coroner and jury and question or cross-question any witness, and in choosing a jury for the purpose of holding such inquest it shall be the duty of the coroner to empanel a jury, no one of which shall be directly or indirectly interested.

Section 3. It shall be the duty of the mine inspector, upon being notified of any fatal accident as herein provided, to immediately repair to the scene of the accident and make such suggestions as may appear necessary to secure the safety of any persons who may be endangered, and if the results of the accident do not require an investigation by the coroner the said mine inspector shall proceed to investigate and ascertain the cause of the accident and make a record thereof, which he shall file as provided for, and to enable him to make the investigation he shall have power to compel the attendance of persons to testify, and to administer oaths or affirmations, and if it is found upon investigation that the accident is due to the violation of any provisions of this act by any person, other than those who may be deceased, the mine inspector may institute proceedings against such person or persons as provided for in section two of article twenty-one of this act.

Section 4. The cost of such investigation shall be paid by the county in which the accident occurred in the same manner as costs of inquests held by coroners or justices of the peace are paid.

ARTICLE XIII.

Neglect or Incompetence of Inspectors.

Section 1. The court of common pleas in any county or district, upon a petition signed by not less than fifteen reputable citizens, who shall be miners or operators of mines, and with the affidavit of one or more of said petitioners attached setting forth that any inspector of mines neglects his duties or is incompetent, or that he is guilty of a malfeasance in office, shall issue a citation in the name of the Commonwealth to the said mine inspector to appear on not less than fifteen days' notice, upon a day fixed, before said court, at which time the court shall proceed to inquire into and investigate the allegations of the said petitioners.

Section 2. If the court find that the said mine inspector is neglectful of his duties or incompetent to perform the duties of his office or that he is guilty of malfeasance in office, the court shall certify the same to the Governor, who shall declare the office of said mine inspector vacant and proceed in compliance with the provisions of this act to supply the vacancy; and the costs of said investigation shall, if the charges are sustained, be imposed upon the mine inspector, but if the charges are not sustained, they shall be imposed upon the petitioners.

ARTICLE XIV.

Discretionary Powers of Inspectors, Arbitration, Et Cetera.

Section 1. The mine inspectors shall exercise a sound discretion in the enforcement of the provisions of this act, and if the operator, owner, miners, superintendent, mine foreman or other persons employed in or about the mine as aforesaid shall not be satisfied with any decision the mine inspector may arrive at in the discharge of his duties under this act, which said decision shall be in writing signed by the mine inspector, the said owner, operator, superintendent, mine foreman or other person specified above shall either promptly comply therewith or within seven days from date thereof appeal from such decision to the court of quarter sessions of the county wherein the mine is located, and said court shall speedily determine the question involved in said decision and appeal and the decision of said court shall be binding and conclusive.

Section 2. The court or the judge of said court in chambers may in its discretion, appoint three practical, reputable, competent and disinterested persons whose duty it shall be, under instructions of the said court, to forthwith examine such mine or other cause of complaint and report under oath, the facts as they exist or may have been, together with their opinions thereon within thirty days after their appointment. The report of said board shall become absolute unless exceptions thereto shall be filed within ten days after the notice of the filing thereof by the owner, operator, mine superintendent, mine foreman, mine inspector and other persons, as aforesaid, and if exceptions are filed the court shall at once hear and determine the same and the decision shall be final and conclusive.

Section 3. If the court shall finally sustain the decision of the mine inspector, then the appellant shall pay all costs of such proceedings, and if the court shall not sustain the decision of the mine inspector then such costs shall be paid by the county: Provided, That no appeal from any decision made by any mine inspector which can be immediately complied with shall work as a supersedeas to such decisions during the pendency of such appeal, but all decisions shall be in force until reversed or modified by the proper court.

ARTICLE XV.

Examinations of Mine Foremen and Fire Bosses.

Section 1. On the petition of the mine inspector the court of common pleas in any county in said district shall appoint an examining board of three persons, consisting of a mine inspector, a miner and an operator or superintendent, which said miner shall have received a certificate of competency as mine foreman in mines generating explosive gases, and the members of said examining board shall be citizens of this Commonwealth, and the persons so appointed shall after being duly organized take and subscribe before an officer authorized to administer the same, the following oath, namely: "We, the undersigned, do solemnly swear (or affirm) that we will perform the duties of examiners of applicants for the position of mine foremen and fire bosses of bituminous coal mines to the best of our abilities, and that in certifying or rejecting said applicants we will be governed by the evidence of the qualifications to fill the position under the law creating the same and not by any consideration of personal favor; that we will certify all whom we may find qualified and none others."

Section 2. The examining board shall examine any person applying thereto as to his competency and qualifications to discharge the duties of mine foreman or fire boss.

Applicants for mine foreman or fire boss certificates shall be at least twenty-three years of age, and shall have had at least five years' practical experience, after fifteen years of age, as miners, superintendent at or inside of the bituminous mines of Pennsylvania and shall be citizens of this Commonwealth and men of good moral character and of known temperate habits.

The said board shall be empowered to grant certificates of competency of two grades, namely: certificates of first grade, to persons who have had experience in mines generating explosive gases and who shall have the necessary qualifications to fulfil the duties of mine foreman in such mines; and certificates of second grade, to persons who give satisfactory evidence of their ability to act as mine foreman in mines not generating explosive gases.

Section 3. The said board of examiners shall meet at the call of the mine inspector and shall grant certificates to all persons whose examination shall disclose their fitness for the duties of mine foreman as above classified, or fire boss, and such certificates shall be sufficient evidence of the holder's competency for the duties of said position so far as relates to the purposes of this act: Provided, That all persons holding certificates of competency granted under the provisions of the act to which this is a supplement shall continue to act under this act: And provided further, That any person acting as mine foreman upon a certificate of service under the act to which this is a supplement may continue to act in the same capacity at any mine where the general conditions affecting the health and safety of the persons employed do not differ materially from those at the mine in which he was acting when said certificate was granted: Provided, however, That if such a mine foreman leaves his present employer and secures employment elsewhere at any mine where in the judgment of the mine inspector of the district the conditions affecting the health and safety of the persons employed do differ materially from those at the mine at which he was employed when his certificate was granted, it shall then be the duty of the mine inspector of the district in which he has secured employment to serve written protest against such mine foreman's employment to the operator of said mine.

Section 4. The examining board shall hold their office for a period of four years from the date from their appointment and shall receive five dollars per day for each day necessarily employed and mileage at the rate of three cents per mile for each mile necessarily traveled, and all other necessary expenses connected with the examination shall be paid by the Commonwealth. Each applicant before being examined shall pay the examining board the sum of one dollar, and one dollar additional for each certificate granted, which shall be for the use of the Commonwealth. The foregoing examination shall be held annually in each inspection district.

ARTICLE XVI.

Suspension of Certificates of Mine Foreman and Fire Bosses.

Section 1. No person shall act as fire boss in any bituminous coal mines, unless granted a certificate of competency by any one of the several examining boards. All applicants applying to any of the examining boards for fire boss certificates shall undergo an oral examination in the presence of explosive gas, and such certificate shall only be granted to men of good moral character and of known temperate habits, and it shall be unlawful for any operator or superintendent to employ any person as fire boss who has not obtained such certificate of competency as required by this act.

Section 2. If the mine foreman or fire boss shall neglect his duties or has incapacitated himself by drunkenness, or has been incapacitated by any other cause for the proper performance of said duties, and the same shall be brought to the knowledge of the operator or superintendent it shall be the duty of such operator or superintendent to discharge such delinquent at once and notify the inspector of the district of such action, whereupon it shall be the duty of said inspector to inform the court of common pleas of the county who shall issue a citation in the name of the Commonwealth to the said operator, superintendent, mine foreman or fire boss to appear at not less than fifteen days' notice upon a day fixed before said court, at which time the court shall proceed to inquire into and investigate the allegations. If the court finds that the allegations are true, it shall notify the examining board of such finding and instruct the said board to withdraw the certificate of such delinquent during any period of time that said court may deem sufficient, and at the expiration of such time he shall be entitled to a re-examination.

ARTICLE XVII.

Employment of Boys and Females.

Section 1. No boy under the age of twelve years, or any woman or girl of any age, shall be employed or permitted to be in the workings of any bituminous coal mine for the purpose of employment, or for any other purpose; and no boy under the age of sixteen shall be permitted to mine or load coal in any room, entry or other working place, unless in company with a person over sixteen years of age. If the mine inspector or mine foreman has reason to doubt the fact of any particular boy being as old as this act requires for the service which said boy is performing at any mine, it shall be the duty of said mine inspector or mine foreman to report the fact to the superintendent, giving the name of said boy, and the said superintendent shall at once discharge the said boy.

ARTICLE XVIII.

Stretchers.

Section 1. It shall be the duty of operators or superintendents to keep at the mouth of the drift, shaft, or slope, or at such other place about the mine as shall be designated by the mine inspector, a stretcher properly constructed, and a woolen and a waterproof blanket in good condition for use in carrying away any person who may be injured at the mine: Provided, That where more than two hundred persons are employed two stretchers and two woolen and two waterproof blankets shall be kept. And in mines generating fire-damp a sufficient quantity of linseed or olive oil, bandages and linen shall be kept in store at the mines for use in emergencies, and bandages shall be kept at all mines.

ARTICLE XIX.

Annual Reports.

Section 1. On or before the twenty-fifth day of January in each year the operator or superintendent of every bituminous coal mine shall send to the mine inspector of the district in which said mine is located a correct report, specifying with respect to the year ending the thirty-first day of December preceding, the name of the operator and officers of the mine and the quantity of coal mined. The report shall be in such form and give such information regarding said mines as may be from time to time required and prescribed by the mine inspector of the district. Blank forms for such reports shall be furnished by the Commonwealth.

ARTICLE XX.

Additional Duties of Mine Foreman.

Section 1. Rule 1. The mine foreman shall attend personally to his duties in the mine and carry out all the instructions set forth in this act and see that the regulations prescribed for each class of workmen under his charge are carried out in the strictest manner possible, and see that any deviation from or infringements of any of them are promptly adjusted.

Rule 2. He shall cause all stoppings along the airways to be properly built.

Rule 3. He shall see that the entries at such places where road grades necessitate sprags or brakes to be applied or removed shall have a clear level width of not less than two and one-half feet, between the side of car and the rib to allow the driver to pass his trip safely and keep clear of the cars there.

Rule 4. He shall direct that all miners undermine the coal properly before blasting it and that blasting shall be done at only such hours as he shall direct and shall order the miners to set sprags under the coal, when necessary for safety while undermining at distances not exceeding seven feet apart, and he shall not allow the improper drawing of pillars.

Rule 5. In mines where fire damp is generated when the furnace fire has been put out it shall not be relighted, except in his presence, or that of his assistant under his instructions.

Rule 6. In case of accident to a ventilating fan or its machinery, or the fan itself, whereby the ventilation of the mine would be seriously interrupted, it shall be his duty to order the men to immediately withdraw from the mine and not allow their return to their work until the ventilation has been restored and the mine has been thoroughly examined by him or his assistant and reported to be safe.

Rule 7. He shall see that all dangerous places are properly fenced off and proper danger signal boards so hung on such fencing, that they may be plainly seen; he shall also travel all air roads and examine all the accessible openings to old workings as often as is necessary to insure their safety.

Rule 8. He shall provide a book or sheet to be put in some convenient place, or places, upon which shall be made a place for the numbers used by the miners with space sufficient to each number, so that the miners can write plainly the quantity of props, their approximate length and the number of caps and other timbers which they require, together with the date of the order. Said book or sheets shall be preserved for thirty days from their date.

Duties of Fire Boss.

Rule 9. He shall enter the mine before the men have entered it, and before proceeding to examine the same, he shall see that the air current is traveling in its proper course, and if all seems right, he shall proceed to examine the workings.

Rule 10. He shall not allow any person, except those duly authorized to enter or remain in any part of the mine through which a dangerous accumulation of gas is being passed in the ventilating current from any other part of the mine.

Rule 11. He shall frequently examine the edge and accessible parts of new falls and old gobs and air courses, and he shall report at once any violation of this act to the mine foreman.

Duties of Miners.

Rule 12. He shall examine his working place before beginning work and take down all dangerous slate, or otherwise make it safe by properly timbering the same before commencing to dig or load coal, and in mines where fire bosses are employed, he shall examine his place to see whether the fire boss has left the proper marks indicating his examination thereof, and he shall at all times be very careful to keep his working place in a safe condition during working hours.

Rule 13. Should he at any time find his place becoming dangerous either from gas or roof, or from any unusual condition which may have arisen, he shall at once cease working, and inform the mine foreman or his assistant of such danger, and before leaving such place he shall place some plain warning at the entrance thereto to warn others from entering into the danger.

Rule 14. It shall be the duty of every miner to mine his coal properly and to set sprags under the coal while undermining to secure it from falling and, after each blast, he shall exercise great care in examining the roof and coal and shall secure them safely before beginning work.

Rule 15. When places are liable to generate sudden volumes of fire damp, or where locked safety lamps are used, no miner shall be allowed to fire shots except under the supervision and with the consent of the mine foreman, or his assistant, or other competent person designated by the mine foreman for that purpose.

Duties of Drivers.

Rule 16. When a driver has occasion to leave his trip he must be careful to see that it is left, when possible, in a safe place, secure from cars or other dangers, or from endangering drivers of trip following.

Rule 17. The driver must take great care while taking his trips down grades to have the brakes or sprags so adjusted that he can keep the cars under control and prevent them from running onto himself or others.

Rule 18. He shall not leave any cars standing where they may materially obstruct the ventilating current, except in case of accident to the trip.

Duties of Trip Riders or Runners.

Rule 19. He shall exercise great care in seeing that all hitchings are safe for use and see that all the trip is coupled before starting, and should he at any time see any material defect in the rope, link or chain, he shall immediately remedy such defect or, if unable to do so, he shall detain the trip and report the matter to the mine foreman.

Duties of Engineer.

Rule 20. It shall be the duty of the engineer to keep a careful watch over his engine and all machinery under his charge and see that the boilers are properly supplied with water, cleaned and inspected at proper intervals, and that the steam pressure does not exceed at any time the limit allowed by the superintendent.

Rule 21. He shall make himself acquainted with the signal codes provided for in this act.

Rule 22. He shall not allow any unauthorized person to enter the engine house, neither shall he allow any person to handle or run the engine, without the permission of the superintendent.

Rule 23. When workmen are being raised or lowered he shall take special precautions to keep the engine well under control.

Rule 24. The locomotive engineer must keep a sharp lookout ahead of his engine and sound the whistle or alarm bell frequently when coming near the partings or landings; he must not exceed the speed allowed by the mine foreman or superintendent. He must not allow any person except his attendants, to ride on the engine or on the full cars.

Duties of Firemen.

Rule 25. Every fireman and other person in charge of a boiler or boilers for the generation of steam shall keep a careful watch of the same; he shall see that the steam pressure does not at any time exceed the limit allowed by the superintendent; he shall frequently try the safety-valve and shall not increase the weight on the same; he shall maintain a proper depth of water in each boiler, and if anything should happen to prevent this, he shall report the same without delay to the superintendent, or other person designated by the superintendent, and take such other action as may, under the particular circumstances, be necessary for the protection of life and the preservation of property.

Duties of Fan Engineer.

Rule 26. The engineer in charge of any ventilating fan must keep it running at such speed as the mine foreman directs in writing. In case of accident to the boiler or fan machinery, not requiring the immediate withdrawal of the men from the mine by reason of serious interruption of the ventilation, he shall invariably notify the mine foreman. If ordinary repairs of the fan or machinery becomes necessary, he must give timely notice to the mine foreman and await his instructions before stopping it. He shall also examine at the beginning of each shift all the fan bearings, stays and other parts, and see that they are kept in proper working order. Should it become impossible to run the fan or necessary to stop it to prevent destruction, he shall then at once stop it and notify the mine foreman immediately and give immediate warning to persons in the mine.

Duties of Furnacemen.

Rule 27. The furnace man must attend to his duties with regularity, and in case he should be likely to be off work for any reason whatever, he must give timely notice to the mine foreman.

Rule 28. The furnace man must at all times keep a clear, brisk fire and the fire must not be smothered with coal or slack during working hours, nor shall he allow ashes to accumulate excessively on or under the bars, or in the approaches to the furnace, and ashes shall be cooled before being removed.

Rule 29. The furnace man must promptly obey the instructions of the mine foreman.

SHAFTS AND SLOPES.

Duties of Hookers-On.

Rule 30. The hookers-on at the bottom of any slope shall be very careful to see that the cars are properly coupled to a rope or chain and that the safety-catch or other device is properly attached to the car before giving the signal to the engineer.

Duties of Cagers.

Rule 31. The cager at the bottom of any shaft shall not attempt to withdraw the car until the cage comes to rest, and when putting the full car on the cage he must be very careful to see that the springs or catches are properly adjusted so as to keep the car in its proper place before giving the signal to the engineer.

Rule 32. At every shaft or slope mine in which provision is made in this act for lowering and hoisting persons, a headman and footman shall be designated by the superintendent or mine foreman, who shall be at their proper places from the time that persons begin to descend until all the persons who may be at the bottom of said shaft or slope, when quitting work, shall be hoisted; such headman and footman shall personally attend to the signals and see that the provisions of this act in respect to lowering or hoisting persons in shafts or slopes shall be complied with.

Rule 33. He shall not allow any tools to be placed on the same cage with men or boys, nor on either cage when persons are being hoisted out of the mine, or being lowered into the mine, except when for the purpose of repairing the shaft or machinery therein. The men shall place their tools in cars provided for that purpose which car, or cars, shall be hoisted or lowered before and after the men have been hoisted or lowered. And he shall immediately inform the mine fore man of any violation of this rule.

Rule 34. He shall also see that no driver, or other person, ascends the shaft with any horse or mule, unless the said horse or mule is secured in a suitable box, or safely penned, and only the driver in charge of said horse or mule shall accompany it in any case.

Duties of Top Man.

Rule 35. The top man of any slope, or incline plane, shall be very careful to close the safety block, or other device, as soon as the cars have reached the landing so as to prevent any loose or runaway cars from descending the slope, or incline plane, and in no case shall such safety block, or other device, be withdrawn until the cars are coupled to the rope or chain and the proper signal given. He shall carefully inspect daily all the machinery in and about the check house, and the rope used for lowering the coal and promptly report any defect discovered to the superintendent, and shall use great care in attaching securely the wagons or cars to the rope and carefully lower the same down the incline. He shall ring the alarm bell in case of accident, and when necessary immediately set free to act, the drop logs or safety switch.

Rule 36. The top man of any shaft shall see that the springs or keeps for the cage to rest upon are kept in good working order, and when taking the full car off he must be careful that no coal or other material is allowed to fall down the shaft.

Rule 37. He shall be at his proper place from the time that persons begin to descend until all the persons who may be at the bottom of said shaft or slope when quitting work shall be hoisted. Such headman and footman shall personally attend to the signals, and see that the provisions of this act in respect to lowering and hoisting persons in shafts or slopes shall be complied with.

Rule 38. He shall not allow any tools to be placed on the same cage with men or boys, nor on either cage when persons are being lowered into the mine, except when for the purpose of repairing the shaft or the machinery therein. The men shall place their tools in cars provided for that purpose, which car or cars shall be lowered before and after the men have been lowered.

Rule 39. He shall also see that no driver, or other person, descends the shaft with any horse or mule, unless the said horse or mule is secured in a suitable box or safely penned, and only the driver in charge of said horse or mule shall accompany it in any case.

General Rules.

Rule 40. If any person shall receive any injury in or about the mine and the same shall come within the knowledge of the mine foreman, and if he shall be of the opinion that the injured person requires medical or surgical treatment, he shall see that said injured person receives the same, and in case of inability of such injured person to pay therefor the same shall be borne by the county. The mine foreman shall report monthly to the mine inspector of the district on blanks furnished by said inspector for that purpose, all accidents resulting in personal injury.

Rule 41. No unauthorized person shall enter the mine without permission from the superintendent or mine foreman.

Rule 42. No person in a state of intoxication shall be allowed to go into or loiter about the mine.

Rule 43. All employes shall inform the mine foreman or his assistant of the unsafe condition of any working place, hauling roads or traveling ways, or of damage to doors, brattices or stoppings, or of obstructions in the air passages when known to them.

Rule 44. No person shall be employed to blast coal, rock or slate, unless the mine foreman is satisfied that such a person is qualified by experience to perform the work with ordinary care.

Rule 45. The mine superintendent or mine foreman shall cause to be constructed safety blocks or some other device for the purpose of preventing cars from falling into the shaft, or running away on slopes or incline planes; and safety switches, drop logs or other device shall be used on all slopes and incline planes; and said safety blocks, safety switches or other device must be maintained in good working order.

Rule 46. Every workman employed in the mine shall examine his working place before commencing work, and after any stoppage of work during the shift he shall repeat such examination.

Rule 47. No person shall be allowed to travel on foot to or from his work on any incline plane, dilly or locomotive roads, when other good roads are provided for that purpose.

Rule 48. Any employe or other person who shall wilfully deface, pull down or destroy any notice board, danger signal, general or special rules or mining laws, shall be prosecuted as provided for in section two, article twenty-one of this act.

Rule 49. No powder or high explosive shall be taken into the mine in greater quantities than required for use in one shift, unless such quantity be less than five pounds, and all powder shall be carried into the mine in metallic canisters.

Rule 50. Powder in quantities exceeding twenty-five pounds, or other explosives in quantities exceeding ten pounds, shall not be stored in any tipple or any weighing office, nor where workmen have business to visit, and no naked lights shall be used while weighing and giving out powder.

Rule 51. All persons except those duly authorized, are forbidden to meddle or tamper in any way with any electric or signal wires in or about the mines.

Rule 52. No greater number of persons shall be hoisted or lowered at any one time in any shaft than is permitted by the mine inspector, and whenever said number of persons shall arrive at the bottom of the shaft in which persons are regularly hoisted or lowered, they shall be furnished with an empty cage and be hoisted, and in cases of emergency a less number shall be promptly hoisted. Any person or persons crowding or pushing to get on or off the cages shall be deemed guilty of a misdemeanor.

Rule 53. Each workman, when engaged shall have his attention directed to the general and special rules by the person employing him.

Rule 54. Workmen and all other persons are expressly forbidden to commit any nuisance or throw into, deposit, or leave coals or dirt, stones or other rubbish in the air way or road so as to interfere with, pollute, or hinder the air passing into and through the mine.

Rule 55. No one, except a person duly authorized by the mine foreman, shall have in his possession a key or other instrument for the purpose of unlocking any safety lamp in any mine where locked safety lamps are used.

Rule 56. Every abandoned slope, shaft, air hole or drift shall be properly fenced around or across its entrance.

Rule 57. No safety lamps shall be entrusted to any person for use in mines until he has given satisfactory evidence to the mine foreman that he understands the proper use thereof and danger of tampering with the same.

Rule 58. No person shall ride upon or against any loaded car or cage in any shaft or slope in or about any bituminous coal mine; no person other than the trip runner shall be permitted to ride on empty trips on any slope, inclined plane or dilly road, when the speed of the cars exceeds six miles per hour. The transportation of tools in and out of the mines shall be under the direction of the mine foreman.

Rule 59. No persons other than the drivers or trip runners shall be permitted to ride on the full cars.

Rule 60. In mines where coal dust has accumulated to a dangerous extent, care shall be exercised to prevent said dust from floating in the atmosphere by sprinkling it with water, or otherwise, as far as practicable.

Rule 61. In cutting of clay veins, spars or faults in entries, or other narrow workings going into the solid coal in mines where explosive gases are generated in dangerous quantities, a bore hole shall be kept not less than three feet in advance of the face of the work, or an advance of any shot hole drilled for a blast to be fired therein.

Rule 62. The engineer placed in charge of an engine whereby persons are hoisted out of or lowered into any mine shall be a sober competent person, and not less than twenty-one years of age.

Rule 63. When a workman is about to fire a blast he shall be careful to notify all persons who might be endangered thereby, and shall give sufficient alarm so that any person or persons approaching shall be warned of the danger.

Rule 64. In every shaft or slope where persons are hoisted or lowered by machinery, as provided by this act, a topman and cager shall be appointed by the superintendent or mine foreman.

Rule 65. Whenever a workman shall open a box containing powder or other explosives, or while in any manner handling the same, he shall first place his lamp not less than five feet from such explosive and in such a position that the air current cannot convey sparks to it, and he shall not smoke while handling explosives.

Rule 66. An accumulation of gas in mines shall not be removed by brushing.

Rule 67. When gas is ignited by blast or otherwise, the person having charge of the place where the said gas is ignited, shall immediately extinguish it if possible, and if unable to do so shall immediately notify the mine foreman or his assistants of the fact. Workmen must see that no gas blowers are left burning upon leaving their working places.

Rule 68. All ventilating fans used at mines shall be provided with recording instruments by which the number of revolutions or the effective ventilating pressure of the fan shall be registered and the registration with its date for each and every day shall be kept in the office of the mine for future reference for one year from its date.

Rule 69. Where the clothing or wearing apparel of employes becomes wet by reason of working in wet places in the mines, it shall be the duty of the operator or superintendent of each mine, at the request in writing of the mine inspector, who shall make such request upon the petition of any five miners of any one mine in the district working in the aforesaid wet places, to provide a suitable building which shall be convenient to the principal entrances of such mine for the use of the persons employed in wet places therein for the purpose of washing themselves and changing their clothes when entering the mine and returning therefrom. The said building shall be maintained in good order and be properly lighted and heated and shall be provided with facilities for persons to wash. If any person or persons shall neglect or fail to comply with the provisions of this article or maliciously injure or destroy, or cause to be injured or destroyed, the said building or any part thereof, or any of the appliances or fittings used for supplying light and heat therein, or doing any act tending to the injury or destruction thereof, he or they shall be deemed guilty of an offense against this act.

Rule 70. In all shafts and slopes where persons, coal or other materials are hoisted by machinery the following code of signals shall be used:

One rap or whistle to hoist coal or other material.

One rap or whistle to stop cage or car when in motion.

Two raps or whistles to lower cage or car.

Three raps or whistles when persons are to be hoisted, and for engineer to signal back ready when persons are to be hoisted, after which persons shall get on the cage or car, then one rap shall be given to hoist.

Four raps or whistles, to turn on steam to the pumps.

But a variation from the above code of signals may be used by permission of the mine inspector: Provided, That in any such case such changed code shall be printed and posted.

Rule 71. No person or persons shall go into any old shaft or abandoned part of the mine or into any other place which is not in actual course of working without permission from the mine foreman, nor shall they travel to and from their work except by the traveling way assigned for that purpose.

Rule 72. No steam pipes through which high pressure steam is conveyed for the purpose of driving pumps or other machinery, shall be permitted on traveling or haulage ways, unless they are encased in asbestos, or some other suitable non-conducting material, or are so placed that the radiation of heat into the atmosphere of the mine will be prevented as far as possible.

Rule 73. Where a locomotive is used for the purpose of hauling coal out of a mine, the tunnel or tunnels through which the locomotive passes shall be properly ventilated and kept free as far as practicable of noxious gases, and a ventilating apparatus shall be provided by the operator to produce such ventilation when deemed necessary and practicable to do so by the mine inspector.

Rule 74. No inexperienced person shall be employed to mine out pillars unless in company with one or more experienced miners, and by their consent.

ARTICLE XXI.

Penalties.

Section 1. Any person or persons whomsoever, who shall intentionally or carelessly injure any shaft, safety lamp, instrument, air-course or brattice, or obstruct or throw open air ways, or take matches for any purpose, or pipes or other smokers' articles beyond any station inside of which locked safety lamps are used, or injure any part of the machinery, or open a door in the mine and not close it again immediately or open any door which opening is forbidden, or disobey any order given in carrying out the provisions of this act, or do any other act whatsoever whereby the lives or the health of persons or the security of the miners or the machinery is endangered, shall be deemed guilty of a misdemeanor and may be punished in a manner provided for in this article.

Section 2. The neglect or refusal to perform the duties required to be performed by any section of this act by the parties therein required to perform them, or the violation of any of the provisions or requirements hereof, shall be deemed a misdemeanor and shall upon conviction thereof in the court of quarter sessions of the county wherein the misdemeanor was committed, be punishable by a fine not exceeding five hundred dollars or imprisonment in the county jail for a period not exceeding six months, or both, at the discretion of the court.

Section 3. That for any injury to person or property occasioned by any violation of this act, or any failure to comply with its provisions by any owner, operator or superintendent of any coal mine or colliery, a right of action shall accrue to the party injured against said owner or operator for any direct damages he may have sustained thereby, and in case of loss of life by reason of such neglect or failure aforesaid, a right of action shall accrue to the widow and lineal heirs of the person whose life shall be lost for like recovery of damages for the injury they shall have sustained.

ARTICLE XXII.

Definition.

Section 1. Coal Mine. In this act the term "coal mine" includes the shafts, slopes, adits, drifts or inclined planes connected with excavations penetrating coal stratum or strata, which excavations are ventilated by one general air current or divisions thereof and connected by one general system of mine railroads over which coal may be delivered to one or more common points outside the mine, when such is operated by one operator.

Excavations and Workings. The term "excavations and workings" includes all the excavated parts of a mine, those abandoned as well as the places actually being worked, also all underground workings and shafts, tunnels and other ways and openings, all such shafts, slopes, tunnels and other openings in the course of being sunk or driven, together with all roads, appliances, machinery and material connected with the same below the surface.

Shaft. The term "shaft" means a vertical opening through the strata, and which is or may be used for the purpose of ventilation or drainage or for hoisting men or material or both in connection with the mining of coal.

Slope. The term "slope" means an incline way or opening used for the same purpose as a shaft.

Operator. The term "operator" means any firm, corporation or individual operating any coal mine or part thereof.

Superintendent. The term "superintendent" means the person who shall have, on behalf of the operator, immediate supervision of one or more mines.

Bituminous Mines. The term "bituminous" coal mines shall include all coal mines in the State not now included in the anthracite boundaries.

The provisions of this act shall not apply to any mine employing less than ten persons in any one period of twenty-four hours.

ARTICLE XXIII.

Section 1. That all acts or parts of acts inconsistent herewith be and the same are hereby repealed.

Approved—The 15th day of May, A. D. 1893.

ROBT. E. PATTISON.

AN ACT

Requiring the weighing of bituminous coal before screening, and providing a penalty for the violation thereof.

Section 1. Be it enacted, &c., That it shall be unlawful for any mine owner, lessee or operator of any bituminous coal mine in this Commonwealth, employing miners at bushel or ton rates, or other quantity, to pass the output of coal mined by said miners over any screen or other device which shall take any part from the weight, value or quantity thereof, before the same shall have been weighed and duly credited to the employe sending the same to the surface and accounted for at the legal rate of weight fixed by laws of this Commonwealth.

Section 2. Any owner, lessee or operator of any bituminous coal mine, violating the provisions of this act, shall be deemed guilty of a misdemeanor, and shall, upon conviction, for each and every such offense be punished by a fine of not less than one hundred ($100) dollars nor more than five hundred ($500) dollars, or by imprisonment in the county jail for a period not to exceed ninety days, or by both such fine and imprisonment, at the discretion of the court; proceedings to be instituted in any court of competent jurisdiction.

Section 3. All acts or parts of acts inconsistent herewith be and the same are hereby repealed.

Approved—The 15th day of July, A. D. 1897.

DANIEL H. HASTINGS.

AN ACT

To amend section four of article eight of an act, entitled "An act relating to bituminous coal mines and providing for the lives, health, safety and welfare of persons employed therein," approved the fifteenth day of May, Anno Domini one thousand eight hundred and ninety-three permitting the use of mineral oils in bituminous mines when used in approved safety lamps.

Section 1. Be it enacted, &c., That section four of article eight of an act, entitled "An act relating to bituminous coal mines and providing for the lives, health, safety and welfare of persons employed therein," approved the fifteenth day of May, Anno Domini one thousand eight hundred and ninety-three, which reads as follows:

"Section 4. No explosive oil shall be used or taken into bituminous coal mines for lighting purposes and oil shall not be stored or taken into the mines in quantities exceeding five gallons. The oiling or greasing of cars inside of the mines is strictly forbidden unless the place where said oil or grease is used is thoroughly cleaned at least once every day to prevent the accumulation of waste oil or grease on the roads or in the drains at that point. Not more than one barrel of lubricating oil shall be permitted in the mine at any one time. Only a pure animal or pure cotton-seed oil or oils that shall be as free from smoke as pure animal or pure cotton-seed oil shall be used for illuminating purposes in any bituminous mine. Any person found knowingly using explosive or impure oil contrary to this section shall be prosecuted as provided for in section two of article twenty-one of this act," be and the same is hereby amended to read as follows:

Section 4. No explosive oil shall be used or taken into bituminous coal mines for lighting purposes except when used in approved safety lamps and oil shall not be stored or taken into the mines in quantities exceeding five gallons. The oiling or greasing of cars inside of the mines is strictly forbidden unless the place where said oil or grease is used is thoroughly cleaned at least once every day to prevent the accumulation of waste oil or grease on the roads or in the drains at that point. Not more than one barrel of lubricating oil shall be permitted in the mine at any one time. Only a pure animal oil or pure cotton-seed oil or oils that shall be as free from smoke as pure animal or pure cotton-seed oil shall be used for illuminating purposes in any bituminous mine. Any person found knowingly using explosive or impure oil contrary to this section shall be prosecuted as provided for in section two of article twenty-one of this act.

Approved—The 28th day of April, A. D. 1899.

WILLIAM A. STONE.

General Mining Laws.

AN ACT

To provide payment to the miner for all clean coal mined by him.

Section 1. Be it enacted, &c., That from and after the passage of this act all individuals, firms and corporations engaged in mining coal in this Commonwealth, who, instead of dumping all the cars that come from the mine into a breaker or chutes, shall switch out one or more of the cars for the purpose of examining them, and determining the actual amount of slate or refuse, by removing said slate or refuse from the car, and who shall, after so doing, willfully neglect to allow the miner in full for all clean coal left after the refuse, dirt or slate is taken out, at the same rate paid at the mine for clean coal less the actual expense of removing said slate or refuse, he shall be deemed guilty of a misdemeanor.

Section 2. That any individual, firm or corporation as aforesaid, violating the provisions of this act, upon suit being brought and conviction had, shall be sentenced by the court to pay a fine of not more than one hundred dollars, and to make restitution by paying to the miner the amount to which, under this act, he would be entitled for the coal mined by him, and for which he was not paid.

Approved—The 13th day of June, A. D. 1883.

ROBT. E. PATTISON

AN ACT

To provide for the recovery of the bodies of workmen enclosed, buried or entombed in coal mines.

Section 1. Be it enacted, &c., That whenever any workman or workmen shall heretofore have been, or shall hereafter be enclosed, entombed or buried in any coal mine in this Commonwealth, it shall be the duty of the court, sitting in equity, in the county wherein such workman or workmen are enclosed, entombed or buried, upon the petition of any of the relatives of those enclosed, entombed or buried, to make an order of court for the petitioner to take testimony in order that the court may ascertain whether such workman or workmen, or the body or bodies of such workman or workmen, can be recovered or taken out of said mine.

If, after full hearing, it shall appear to the court that such undertaking is feasible or practicable, said court may forthwith issue a peremptory mandamus to the owner or owners, lessee or lessees, operator or operators of such coal company, to forthwith proceed to work for and recover and take out the body or bodies of such workman or workmen, and said court shall have full authority to enforce such peremptory mandamus in the manner already provided for the enforcement of such process.

Approved—The 9th day of May, A. D. 1889.

JAMES A. BEAVER.

AN ACT

For the better protection of employes in and about the coal mines by preventing mine superintendent, mine foremen and assistants from receiving or soliciting any sums of money or other valuable consideration from men while in their employ, and providing a penalty for violation of the same.

Section 1. Be it enacted, &c., That on and after the passage of this act any mine superintendent, mine foreman or assistant foreman, or any other person or persons who shall receive or solicit any sum of money or other valuable consideration, from any of his or their employes for the purpose of continuing in his or their employ, shall be guilty of a misdemeanor, and upon conviction shall be subject to a fine not less than fifty dollars, nor more than three hundred dollars, and undergo an imprisonment of not less than six months, or both, at the discretion of the court.

Section 2. All acts or parts of acts inconsistent herewith be and the same are hereby repealed.

Approved—The 15th day of June, A. D. 1897.

DANIEL H. HASTINGS.

AN ACT

Establishing a Bureau of Mines in the Department of Internal Affairs of Pennsylvania, defining its purposes and authority, providing for the appointment of a chief of said bureau and assistants, and fixing their salaries and expenses.

Section 1. Be it enacted, &c., That there is hereby established in the Department of Internal Affairs of Pennsylvania a bureau to be known as the Bureau of Mines, which shall be charged with the supervision of the execution of the mining laws of this Commonwealth, and the care and publication of the annual reports of the inspectors of coal mines.

Section 2. The chief officer of the bureau shall be denominated Chief of the Bureau of Mines, and shall be appointed by the Governor, by and with the advice and consent of the Senate, within thirty days after the final passage of this act, and every four years thereafter, who shall be commissioned by the Governor to serve a term of four years from the date of his appointment, and until his successor is duly qualified, and shall receive an annual salary of three thousand dollars and traveling expenses; and in case of a vacancy in the office of Chief of said Bureau, by reason of death, resignation or otherwise, the Governor shall appoint a qualified person to fill such vacancy for the unexpired balance of the term.

Section 3. The Chief of the Bureau of Mines shall be a competent person having had at least ten years practical experience in the working and ventilation of coal mines of this State, and a practical and scientific knowledge of all noxious and dangerous gases found in such mines. The said Chief of the Bureau of Mines so appointed shall, before entering upon the duties of his office, take and subscribe to the oath of office prescribed by the Constitution, the same to be filed in the office of the Secretary of the Commonwealth, and give to the Commonwealth a bond in the penal sum of ten thousand dollars, with surety to be approved by the Governor and Secretary of Internal Affairs, conditioned for the faithful discharge of the duties of his office.

Section 4. It shall be the duty of the Chief of the Bureau to devote the whole of his time to the duties of his office, and to see that the mining laws of this State are faithfully executed; and for this purpose he is hereby invested with the same power and authority as the mine inspectors to enter, inspect and examine any mine or colliery within the State, and the works and machinery connected therewith, and to give such aid and instruction to the mine inspectors from time to time as he may deem best calculated to protect the health and promote the safety of all persons employed in and about the mines, and the said Chief of the Bureau of Mines shall have the power to suspend any mine inspector for any neglect of duty, but such suspended mine inspector shall have the right to appeal to the Secretary of Internal Affairs, who shall be empowered to approve of such suspension or restore such suspended mine inspector to duty, after investigating the causes which led to such suspension. Should the Chief of the Bureau of Mines receive ininformation by petition, signed by ten or more miners, or one or more operators, setting forth that any of the mine inspectors are neglectful of their duty, or are incompetent to perform the duties of their office, or are guilty of malfeasance in office, he shall at once investigate the matter, and if he shall be satisfied that the charge or charges are well founded, he shall then petition the court of common pleas, or the judge in chambers, in any county within or partly within the inspection district of the said mine inspector; which court, upon receipt of said petition and a report of the character of the charges and testimony produced, shall at once issue a citation in the name of the Commonwealth to the said inspector, to appear on not less than fifteen days' notice, on a fixed day before said court, at which time the court shall proceed to inquire into the allegations of the petitioners, and may require the attendance of such witnesses on the subpoena issued and served by the proper officer or officers, as the judge of the court and the Chief of said Bureau may deem necessary in the case; the inspector under investigation shall also have similar power and authority to compel the attendance of witnesses in his behalf. If the court shall find by said investigation that the said mine inspector is guilty of neglecting his official duties, or is incompetent to perform the duties of his office, or is guilty of malfeasance in office, the said court shall certify the same to the Governor, who shall declare the office vacant, and shall proceed to supply the vacancy as provided for by the mining laws of this State. The cost of said investigation shall, if the charges are sustained, be imposed upon the mine inspector, but if the charges are not sustained the cost shall be paid out of the State Treasury, upon voucher or vouchers duly certified as to correctness by the judge or proper officer of the court where such proceedings are held. To enable the said Chief of the Bureau of Mines to conduct more effectually his examinations and investigations of the charges and complaints which may be made by petitioners against any of the mine inspectors as herein provided, he shall have power to administer oaths and take affidavits and depositions in form and manner provided by law: Provided however, That nothing in this section shall be construed as to repeal section thirteen of article two of the act of Assembly approved the second day of June, Anno Domini one thousand eight hundred and ninety-one, entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith," and also articles thirteen and fourteen of an act of Assembly approved the fifteenth day of May, Anno Domini one thousand eight hundred and ninety-three, entitled "An act relating to bituminous coal mines, and providing for the lives, health, safety and welfare of persons employed therein."

Section 5. It shall be the duty of the Chief of the Bureau of Mines to take charge of and preserve in his office the annual reports of the mine inspectors, and transmit a copy of them, together with such other statistical data compiled therefrom and other matter relating to the work of the Bureau as may be of public interest, properly addressed to the Secretary of Internal Affairs for transmission to the Governor and the General Assembly of this Commonwealth, on or before the first day of March in each year. It shall also be the duty of the Chief of the Bureau of Mines to see that said reports, or copy of them, are placed in the hands of the Public Printer for publication at the same date; the same to be published under direction of the Secretary of Internal Affairs as other reports of his Department are now required by law to be published, and in order that the Chief of said Bureau may be able to prepare, compile and transmit his annual report to the Secretary of Internal Affairs within the time herein specified, the mine inspectors are hereby required to deliver their annual reports to the Secretary of Internal Affairs on or before the fifteenth day of February in each year. In addition to the annual reports herein required of the mine inspectors, the said mine inspectors shall furnish the Chief of the Bureau of Mines, monthly and also such special reports or information on any subject regarding mine accidents or other matters pertaining to mining interests, or the safety of persons employed in mines as he at any time may require or may deem necessary in the proper and lawful discharge of his official duties. The Chief of the Bureau of Mines shall also establish as far as may be practicable a uniform style and size of blanks for the annual, monthly and special reports of the mine inspectors, and prescribe the form and character of subject matter to be embraced in the text and the tabulated statements of their reports. The Chief of the Bureau of Mines is hereby authorized to make such examinations and investigations as may enable him to report upon the various systems of coal mining practiced in the State, method of mining, ventilation, machinery employed, structure and character of the several coal seams operated, and of the associated strata, the circumstances and responsibility of mine accidents, economy of coal production, coal waste, area and exhaustion of coal territory, and such other matters as may pertain to the general welfare of coal miners and others connected with coal mining, and the interests of coal mine owners and operators in this Commonwealth.

Section 6. The Chief of the Bureau of Mines shall keep in his office a journal or record of all examinations made and work done under his administration, and copies of all official communications, and is hereby authorized to procure such books, instruments and chemical or other tests as may be found necessary to the proper discharge of his duties under this act, at the expense of the State. All instruments, plans, books and records pertaining to the office shall be the property of the State, and shall be delivered to his successor in office.

Section 7. The Chief of the Bureau of Mines shall at all times be accountable to the Secretary of Internal Affairs for the faithful discharge of the duties imposed upon him by law, and the administration of his office and the rules and regulations pertaining to said Bureau shall be subject to the approval of the Secretary of Internal Affairs, who is hereby empowered to appoint an assistant to the Chief of the Bureau, at a salary of fourteen hundred dollars per annum, and a messenger at a salary of three hundred dollars per annum: And provided further, That the salaries of the Chief of the Bureau of Mines, his assistant and the messenger, shall be paid out of the State Treasury in the manner as other employes of the Department of Internal Affairs are now paid. Provided, That the Chief of said Bureau of Mines may be removed or suspended at any time by the Secretary of Internal Affairs, when in the opinion of said Secretary there has been a neglect of duty or a failure to comply with the law, or the instructions of the Secretary of Internal Affairs.

Section 8. No person who is acting as a land agent, or as manager, viewer or agent of any mine or colliery, or who is interested in operating any mine or colliery, shall at the same time serve as Chief of the Bureau of Mines under the provisions of this act.

Section 9. That the mine inspectors of each district of this State shall, within six months after the final passage and approval of this act, deposit in the Bureau of Mines an accurate map or plan of such coal mine, which may be on tracing muslin or sun print, drawn to a prescribed scale; which map or plan shall show the actual location of all openings, excavations, shafts, tunnels, slopes, planes, main headings, cross headings, and rooms or working places in each strata operated; pump, fans or other ventilation apparatus, the entire course and direction of air currents, the relation and proximity of the workings of such coal mines to all other adjoining mines or coal lands, and the relative elevation of all tunnels and headings, and of the face of working places near to or approaching boundary lines or adjacent mines; and on or before the close of each calendar year transmit to the Chief of the Bureau of Mines a supplemental map or plan showing all excavations, changes and additions made tioned map or plan. All such maps or plans to be and remain in the in such mine during the year, drawn to the scale as the first men- Bureau of Mines as a part of the records of that office.

Section 10. All acts or parts of acts inconsistent with this act be and the same are hereby repealed.

Approved—The 15th day of July, A. D. 1897.

DANIEL H. HASTINGS.

REPORT

OF THE

BUREAU OF MINES.

INTRODUCTION.

The year 1901 has been the most prosperous for all concerned in the mining of coal of any year for the last quarter of a century. The coal was in great demand and brought a fair price, which enabled the operators to pay their employes fair wages during the year, and to give them steadier employment than they have had for a number of years. The production of anthracite coal was 59,905,951 tons; the bituminous mines produced 80,914,236 tons; an increase for the former over the previous year, of 8,688,633 tons, the increase for the latter was only 1,595,874 tons. The production of both was 140,820,187 tons, an increase over the previous year of 10,284,507 tons in the total production.

In my opinion the daily production of the anthracite mines has reached its maximum, the average quantity handled per day worked by breakers during the past year having been about 308,000 tons, which is somewhat less than that of the year 1898, when it was 312,000 tons.

If there should be a greater demand for anthracite coal it must be met by working a greater number of days. The average number of days worked during the past year was 194.5, an increase of 23.5 days over the previous year. If the average had been 240 days, I think the mines could have produced about 72,000,000 tons.

The bituminous mines worked an average of 216.25 days during the past year, a decrease of 2.75 days from the previous year.

The production of bituminous coal depends on the consumption in this and other countries, as the supply is practically unlimited and can be made equal to the demand.

The increase of production in the anthracite mines would have been much greater had not the disastrous rain storms during the year caused the drowning out of so many of the mines, and in addition to this, the trade experienced a shortage of cars when the coal was in the greatest demand. The production of bituminous coal also would have been considerably increased had the railroads been able to supply the mines with a sufficient number of cars.

In the production of this vast quantity of anthracite coal, 513 persons lost their lives, and 1,245 were more or less severely injured; thus the accidents were increased over the previous year 102 and 108 respectively.

In the production of bituminous coal 301 persons lost their lives and 659 were injured, an increase for the year of 39 in the fatal and 64 in the non-fatal accidents. The number of wives made widows by these fatalities in the anthracite and bituminous mines were 184 and the orphans numbered 412.

Of the 513 fatal accidents in and about the anthracite mines, 435 or about 85 per cent. occurred inside of the mines, and 78 or 15 per cent. on the surface; and of this number 346, or about 80 per cent. of the victims inside were miners and their laborers, who number 64,072 or 65 per cent. of the inside employes.

Of the fatal accidents that occurred in and about the bituminous mines 290 or 96.34 per cent. were underground, and 11 or 3.66 per cent. on the surface; 72 per cent. of this number were miners or their helpers.

To my mind, the occupation of the miner and his laborer, or his helper, can be classed as extra hazardous, as is that of locomotive engineers, firemen and brakemen, consequently these people should be especially well paid for their laborious and dangerous calling.

A large number of the non-fatal accidents were not of a serious nature, yet hundreds of them caused the fracture of limbs, whereby a large number of victims were maimed for life, others being unable to follow their usual occupations in the mines, are forced to go into the breakers to earn sufficient money to keep soul and body together.

By comparing the reports of the Anthracite Inspectors, it can be seen that they show nearly the same percentage of fatalities in proportion to the number employed, while it is quite different in the bituminous districts, as several of them have very few accidents, and some of them will compare favorably with any inspection districts in this or any other country.

The chief causes of fatalities inside of the mines range in the following order: Falls, cars, powder and blasts, explosions of fire damp, falling into shafts and slopes, etc. In the anthracite mines 226 persons or 51.25 per cent. lost their lives by "falls;" 69 or 15.62 per cent. by "cars;" 51 or 11.56 per cent. by "powder and blasts;" 33 or 7.48 per cent. by "explosions of gas;" and 24 or 5.44 per cent. by falling into "shafts, slopes, etc;" while in the bituminous mines 188 persons, or 64.82 per cent. lost their lives by "falls;" 48 or 16.55 per cent. by "cars;" 8 or 2.75 per cent. by "powder and blasts;" 28 or 9.65 per cent. by "explosions of gas, etc."

From these figures it may be seen that the fatalities from "falls" are in nearly the same proportion in the anthracite and bituminous mines, while those from other causes vary considerably.

The consumption of explosives was 38,020,100 pounds, or 19,010 tons of black powder and 4,155,685 pounds, or 2,077 tons of dynamite in the anthracite mines, while only 7,851,500 pounds of black powder and 693,801 pounds of dynamite were consumed in the bituminous mines. This fact alone is the reason for the greater number of fatalities by explosives in the hard coal mines.

For each pound of explosives 1.42 tons of coal were produced in the anthracite mines; while in the bituminous, each pound of powder loosened 9.46 tons.

Electricity is one cause of fatalities in the bituminous mines (seven having lost their lives through it during 1901), that so far has not proved fatal to any person in the anthracite mines. Electricity in various forms has been the cause of many deaths in the soft coal mines, either from the men coming in contact with the electric trolley wire, or with the electric wire that carries the power to the electric cutting machines. In my opinion, separate traveling ways should be provided for the workmen when the haulage is done by electricity, unless the wires can be raised to a distance of at least six feet from the rail, and even then there should be sufficient room for passing on the main haulage roads at all points as men cannot always reach the "safety holes" in time. In every case where electric machines are used for cutting coal, the wires should be made absolutely safe, as men in the hurry of their work forget about the "deadly wire," touch it, and all is over, and the report follows "killed by an electric shock." Humanity demands protection for the workingmen from this most deadly agent recently introduced and employed in coal mines. I hope the time will come when "compressed air," "liquid air," or some other agent will supplant electricity in coal mines, but this will not take place untll the necessary power can be generated as cheaply as by electricity.

In gaseous mines, electric cutting machines or electric motors should never be permitted in use, as otherwise sooner or later they will be the cause of a great catastrophe.

The number of employes in and about the anthracite mines was

147,651, an increase of 3,925 over the previous year, 98,434 of these were employed inside, and 49,217 outside of the mines.

The number of persons employed in and about the bituminous mines was 117,602, an increase of 85.84 over the previous year; of these, 95,562 were employed inside and 22,040 on the surface.

INSPECTIONS OF MINES DURING THE YEAR 1901.

The mines were systematically and regularly inspected ,and as frequently as the other duties of the inspectors would permit. Every fatal and serious accident was inquired into, which of itself takes up a great deal of time, as also does attending inquests, attending court on cases in connection with their duties, and the office work also took considerabe time; yet I find that the Anthracite Inspectors made 1,350 mine inspections and the Bituminous Inspectors 2,140. The inspections were made as frequently as the conditions of the mines required; some having been inspected frequently, about once each month, while others were inspected only two or three times during the year, and a few of the mines but once.

The inspectors report the mines generally in good condition as to ventilation, drainage, etc., as could be expected. They all report some exceptions, but the mines that are not up to the standard are old mines that are being "robbed" preparatory to being abandoned, and small operations that do not generate explosive gas.

I am satisfied with the general work of the inspectors, yet there are a few of them who are not doing their work to my satisfaction. I have hopes of their improvement during the coming year; however, I may have to take measures provided by law, in an effort to better the service.

RECAPITULATION.

Giving the total number tons of coal mined, shipped, etc., number of days worked, number of employes, number of persons killed and injured, number kegs of powder and pounds of dynamite used, in the Anthracite districts of Pennsylvania, for the year ending December 31, 1901.

Districts.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at collieries.	Number of tons sold to local trade and used by employes.	Total production of coal in tons.	Average number of days worked.	Number of persons employed.	Number of fatal accidents.	Number of non-fatal accidents.	Number of kegs of powder used.	Number pounds of dynamite used.	Number of horses and mules in use.
First,	7,107,980	519,898	100,466	7,728,344	198	18,773	58	118	262,080	204,959	1,853
Second,	7,938,312	527,223	203,525	8,671,060	171	18,023	63	186	268,529	119,030	2,014
Third,	6,315,421	472,212	137,965	6,925,598	173	17,651	84	173	228,360	393,036	2,272
Fourth,	8,840,663	760,626	289,043	9,891,332	191	21,317	78	322	256,326	483,024	2,806
Fifth,	5,529,152	718,026	127,761	6,374,939	223	16,108	60	89	120,616	1,012,879	1,700
Sixth,	7,020,527	935,220	100,563	8,686,320	197	23,277	73	144	162,622	614,896	2,002
Seventh,	6,145,412	772,403	135,023	7,052,828	216	19,844	62	95	150,450	660,094	2,055
Eighth,	4,520,435	572,767	79,328	5,172,530	188	12,655	35	116	71,782	637,797	1,357
Total,	53,417,902	5,270,025	1,178,671	59,905,951	194½	147,651	513	1,243	1,520,804	4,155,685	16,059

RECAPITULATION—Continued.

Districts.	Number of Boilers.					Locomotives.			Number of steam engines of all classes.	Total horse power.	Number of pumps delivering water to surface.	Capacity in gallons per minute.	Quantity in gallons delivered to surface per minute.	Number of electric dynamos.	Number of air compressors.
	Cylindrical.	Horse power.	Tubular.	Horse power.	Total horse power.	Steam.	Air.	Electric.							
First,	375	9,026	158	18,506	27,782	39	18	12	437	30,637	104	72,614	49,315	16	18
Second,	392	12,738	115	15,665	28,273	25	....	9	495	32,786	81	52,262	31,770	9	8
Third,	284	9,420	231	34,113	43,533	41	5	6	507	51,326	117	86,507	51,462	11	26
Fourth,	643	22,217	245	37,168	59,385	39	4	8	769	86,137	92	75,876	40,832	7	30
Fifth,	646	21,600	291	30,938	52,458	107	11	....	554	32,031	157	155,961	85,587	15	23
Sixth,	446	16,925	345	47,571	64,496	41	11	....	513	50,991	124	116,953	85,477	2	18
Seventh,	295	10,487	291	39,860	52,515	36	2	3	413	49,526	123	166,711	80,450	5	8
Eighth,	286	7,444	257	32,135	39,579	34	....	2	265	30,918	60	58 605	28,362	1	9
Total,	3,367	109,857	1,933	255,956	368,021	362	51	40	4,133	364,352	858	785,489	453,255	66	140

Recapitulation table showing number of each class of employes inside and outside the mines of the Anthracite region for 1901, by districts.

Anthracite Districts.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							
	Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	Grand total, inside and outside.
First,	69	47	5,484	4,634	1,966	408	1,562	14,170	39	222	441	1,951	74	1,876	4,603	18,773
Second,	60	95	4,589	4,459	1,854	429	1,655	13,141	48	228	363	2,115	104	2,024	4,882	18,023
Third,	78	90	4,572	3,662	1,906	428	1,567	12,303	43	263	495	2,142	105	2,303	5,351	17,654
Fourth,	63	164	5,720	5,126	1,869	909	3,033	16,894	42	364	671	3,288	106	2,952	7,423	24,317
Fifth,	73	49	3,670	2,572	829	240	1,935	9,368	44	360	685	2,131	123	3,397	6,740	16,108
Sixth,	64	136	4,787	2,529	931	276	3,379	12,102	63	360	790	3,618	116	3,228	8,175	20,277
Seventh,	82	140	5,704	2,017	1,000	287	3,486	12,716	48	302	623	2,603	91	3,461	7,128	19,844
Eighth,	50	109	3,268	1,269	539	171	2,334	7,740	52	232	547	1,716	85	2,283	4,915	12,655
Total,	539	830	37,804	26,268	10,894	3,148	18,951	98,434	379	2,331	4,615	19,564	804	21,524	49,217	147,651

Table showing causes of fatal accidents and number attributable to each cause, that occurred in and about the Anthracite mines, and the number of widows and orphans left by reason of such accidents during the year 1901.

Causes of Accidents.	1st District.		2d District.		3d District.		4th District.		5th District.		6th District.		7th District.		8th District.		Total.		Percentage.	
	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.
By falls of coal, slate and roof,	34	......	30	......	37	......	28	......	29	......	31	......	24	......	10	......	223	......	50.57	....
By mine cars and machinery,	10	2	11	7	10	7	12	5	7	8	6	9	5	8	2	6	63	52	14.28	72.22
By explosions of gas and dust,	2	......	3	......	6	......	15	......	......	......	2	......	1	......	2	......	31	......	7.03	....
By explosions, powder, blasts, etc.,	6	......	5	......	10	......	6	......	8	......	6	......	8	......	5	......	54	......	12.25	....
By falling into shafts, slopes, etc.,	1	......	2	......	4	......	2	......	1	......	6	......	5	......	4	......	25	......	5.67	....
By suffocation, etc.,	......	1	......	......	2	2	1	......	1	......	......	......	1	......	......	......	5	......	1.13	....
By mules,	......	......	......	......	3	......	1	1	......	......	5	......	2	2	3	3	14	9	3.17	12.50
Miscellaneous causes,	2	......	4	1	3	......	4	3	4	2	3	5	6	......	......	......	26	11	5.89	15.28
Total,	55	3	55	8	75	9	69	9	50	10	59	14	52	10	26	9	441	72	100	100

Number of widows, 277.
Number of orphans, 624.

Table showing causes of non-fatal accidents and number attributable to each cause that occurred in and about the Anthracite mines for the year 1901.

Causes of Accidents.	1st District.		2d District.		3d District.		4th District.		5th District.		6th District.		7th District.		8th District.		Total.		Percentage.	
	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.
By falls of coal, slate and roof,	38	......	68	......	48	......	103	......	28	......	48	......	30	......	34	......	397	......	36.39	....
By mine cars and machinery,	31	8	44	15	33	9	49	22	11	18	11	9	14	7	19	5	212	93	19.43	61.18
By explosion of gas and dust,	18	......	14	......	30	......	51	......	4	......	33	......	9	......	21	......	180	......	16.49	....
By explosions, powder, blasts, etc.,	12	......	20	......	26	......	24	......	11	......	22	......	17	......	13	......	145	......	13.29	....
By falling into shafts, slopes, etc.,	......	......	......	......	......	......	......	......	2	......	4	......	3	......	4	......	13	......	1.19	....
By mules,	1	......	......	2	9	1	16	......	1	......	......	......	2	......	3	1	32	4	2.93	2.63
Miscellaneous causes,	6	4	16	7	13	4	47	10	6	8	5	12	7	6	12	4	112	55	10.27	36.18
Total,	106	12	162	24	159	14	290	32	63	26	123	21	82	13	106	10	1,091	152	100	100

ACCIDENTS FROM FALLS.

Accidents from falls of coal, of roof and sides, have always been very numerous in the mines of this State, and the same can be said of other states, and of almost all the countries where coal has been and is being mined, but in a somewhat lesser degree, and it is possible that "falls" will always continue to be the chief cause of accidents in coal mines.

After stating the above facts the momentous question is, can the number of these accidents be reduced? I answer emphatically, Yes; but the only way that it can be reduced is by eternal vigilance on the part of miners, foremen and superintendents. The superintendents can aid, by formulating a series of rules for systematic propping; the foreman, by seeing that the rules are strictly obeyed; the miners, by complying with all rules, and also by setting props when needed even if the rules are not specific on all points. When rules are made for systematic propping, the Inspector when making his inspections can see whether the rules are being violated. Systematic propping has been the theme of the Inspectors in all the years from 1870 to date.

I remember well that Mine Inspector T. M. Williams asserted in 1870, that if he had the authority he would enforce an arbitrary rule that all miners in breasts should put up props every six feet, whether the roof was good or bad, and that when the roof was bad they should stand as close as needed. I remember also that the miners and superintendents, myself amongst the number, thought that the Inspector was very unreasonable. The superintendents were against it as it would take too much timber, which would add to the cost; the miners were against it as it entailed too much extra labor. Neither superintendents or miners should be listened to, as human life is more valuable than the extra cost of timber or the extra labor involved. If the superintendents will not adopt the rules for systematic propping, I think the Legislature should pass a compulsory law on this important subject, and add a severe penalty for noncompliance, which would alike reach the miner, the foreman and the superintendent.

During the past twenty years more than 52 per cent. of the fatal accidents have been caused by falls, but there is no reason why the number from this cause should not be reduced at least 50 per cent. If as much care were taken to guard against falls of coal, roof and sides as is being taken in regard to ventilation, to keep the mines clear of what is generally called the "deadly gas," a stringent rule should be adopted against the more deadly "falls." The number killed by gas in the anthracite mines during the past twenty years was 663, while the number killed by falls during the same period was 3,521, and the same proportion is found in the bituminous mines, only in a lesser degree.

Rule 5, Anthracite Mine Law, is as follows: "In mines generating explosive gases, the mine foreman or his assistant shall make a careful examination every morning of all working places and traveling roads, and all other places which might endanger the safety of the workmen * * * and such examination shall be made with a safety lamp * * * Every report shall be recorded without delay in a book which shall be kept at the colliery for the purpose, and shall be signed by the person making the examination," and articles of like import are found in the Bituminous Law.

Article XI, Anthracite Law, Sections 1, 2 and 3, provides that "It is the duty * * of the superintendent or mine foreman * * to furnish to the miners all props * * necessary for the safe mining of coal." "Every workman in want of props * * shall notify the * * mine foreman of the fact, at least one day in advance * * and in case of danger from loose roof or sides, he shall not continue to cut or load coal until the said props * * have been properly furnished and the place made secure." "A failure to comply with the provisions of this article shall be deemed an offence against this act * *"

Similar provisions are made for the protection of the employes in the Bituminous mines, but they are somewhat more elaborate. I would suggest that an addition be made to both anthracite and bituminous laws as follows: "In all mines, the mine foreman or his assistants shall make a careful examination each day of all working places and traveling roads to see that the roof and sides are properly supported by timber or other material and to see that the rules in regard to systematic propping are faithfully carried out. Any miner who is found violating these rules or neglecting to comply with their provisions, shall be suspended. Reports of all examinations shall be recorded in a book which shall be kept at the colliery for the purpose, and it shall be the duty of the Mine Inspector to see that all such examinations are properly recorded and signed by the person making such examination, the record book to be provided by the Bureau of Mines."

An addition, or an amendment similar to the above, would, in my opinion, go a great way toward reducing the number of lives lost by "falls." Other countries, notably France, took this question up in a business like manner years ago. Great Britain being anxious to reduce the number of accidents by "fall," sent a commission of four Inspectors of Mines to look into the methods of working coal at the Courrieres Collieries, in France, and report to the Secretary of State, on the methods of preventing "falls of roof and sides." The Commissioners report was as follows:

"The object of our visit was to see in practical operation the methods adopted by the Courrieres Collieries for guarding against accidents by falls, and to ascertain the general conditions under which the work was carried on; we were also anxious to assure ourselves that the means adopted were adequate for the result obtained (viz: the great reduction in fatal accidents by "falls" since systematic timbering had been enforced along with increased supervision), and to see to what extent the system might be applicable to British mines. The first day was devoted to underground inspection of some of the workings of the Louise seam at No. 10 of the Courrieres Concession, and to obtaining information on various matters which appeared to be important to our inquiry.

"The second day of our stay was spent in visiting two pits belonging to the Lens Colliery, at one of which we made an underground inspection.

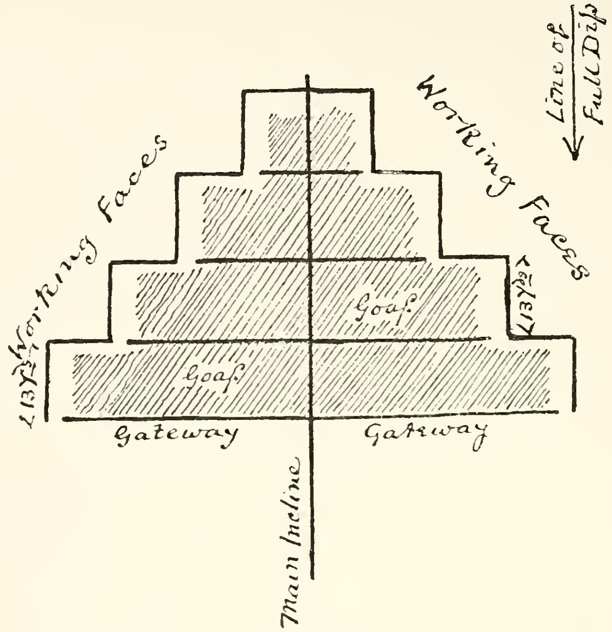
"The Courrieres Concession has an area of about 13,000 acres; it possesses 44 seams of coal, of which a large number are being worked. The average thickness of the bituminous coal is 3 feet, 7 inches; of the semi-bituminous, 2 feet 10 inches; of the quarter-bituminous, 2 feet 8 inches * * * The roof is almost invariably shale, and the floor a hard under clay * * Parts of the seams are flat, but a dip of 10° to 20° is not uncommon; in some places the seams are completely overturned and here the dip is as much as 50° or even 60°.

"The Courrieres Company employs 5,794 persons inside and 1,204 outside of the mines; about 42 per cent. of the outside workmen are employed in getting coal, 6 per cent. in preparatory work, and 52 per cent. in haulage and other work * * * The depth of the No. 10 pit, Courrieres, is 387 yards.

"Where the seams are inclined, the two common methods of working may be regarded as kinds of "long wall" work, differing from the typical "long wall" with its straight, continuous face, by having a series of short faces arranged step fashion, each one slightly in advance of the other. These faces advance according to circumstances on the line of the strike, or to the full rise of the seam. In the former case, the faces advance on the level course to the right and left of a self-acting plane, each face being 13 yards wide, and 9 or 10 yards in advance of the face above. Each of these working places is connected with the incline by a level gate road. These gate roads are formed on the low side of each working place, and the coal is cast down the face by hand, and filled into tubs (cars) at the end of the tramroad. There are three miners in each working place.

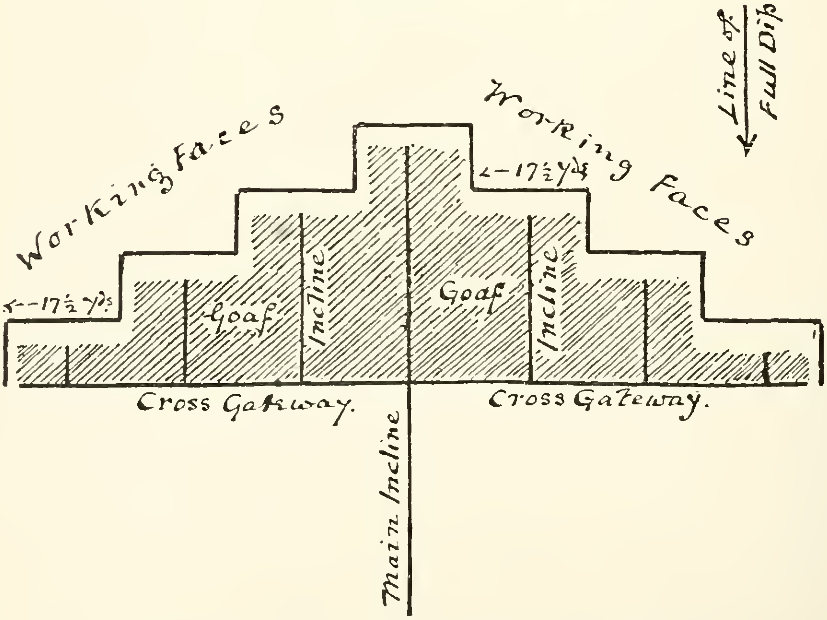
"When the working faces advance to the rise of the seam, each face is about 17½ yards wide, and is served by a short inclined plane

FIG 1.



Longwall in steps. Faces advancing on level course.

FIG. 2.



Longwall in steps. Faces advancing to full rise.

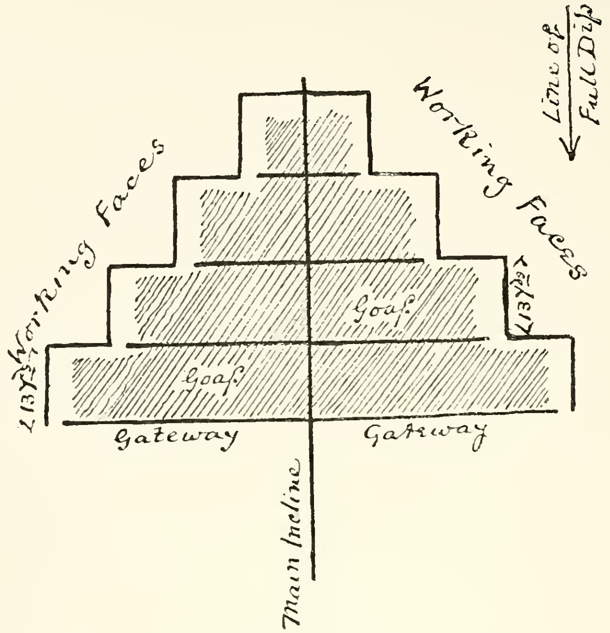
down which the tubs are lowered to a cross gateway along which they are taken to a main incline. The following diagrams, Figures 1 and 2, illustrate these methods of working:

"In some of the comparatively flat parts of the seams, a system of pillar work is in vogue; levels are driven about 11 yards apart, centre to centre, leaving a pillar of about 8¾ yards between them. These pillars are worked off in portions (lifts) 13 feet wide at a time.

"The main roadways were well lined by masonry, steel or timber, and were in excellent order; here there was very little chance of anyone being injured by a fall. It is more important to consider the branch roadways and working faces, the latter especially being subject to accidents from falls of roof or side. The chief points to be considered are: Material employed, method of setting the timber, method of drawing the timber, cost of timbering, supervisionfi and official regulations upon the subject. The kinds of timber used were pine, oak, birch, ash, cherry and hornbeam, this latter has to be used green. The branch roadways leading to the working places are made by "ripping" the roof or floor after the coal has been 'got' (mined) in the ordinary way. These roads are supported systematically by sets of timber placed 3 feet 3 inches apart * * light poles are laid from 'bar' to 'bar,' at intervals of 18 or 20 inches, so that there is no unsupported roof space exceeding 3 feet 3 inches by 18 or 20 inches. Similar light poles or lagging pieces are placed between the props and the side of the road if necessary. We were informed that to provide against small falls of roof where the roof is very bad, additional small pieces of wood are placed crosswise from pole to pole; during the process of "ripping" the workmen are further protected by iron bars pushed forward above the 'bar' of the last set, and made firm by a wedge at the back end. In some places there seems to be considerable pressure or crush on these roads, as they have to be maintained through the 'goaf.'

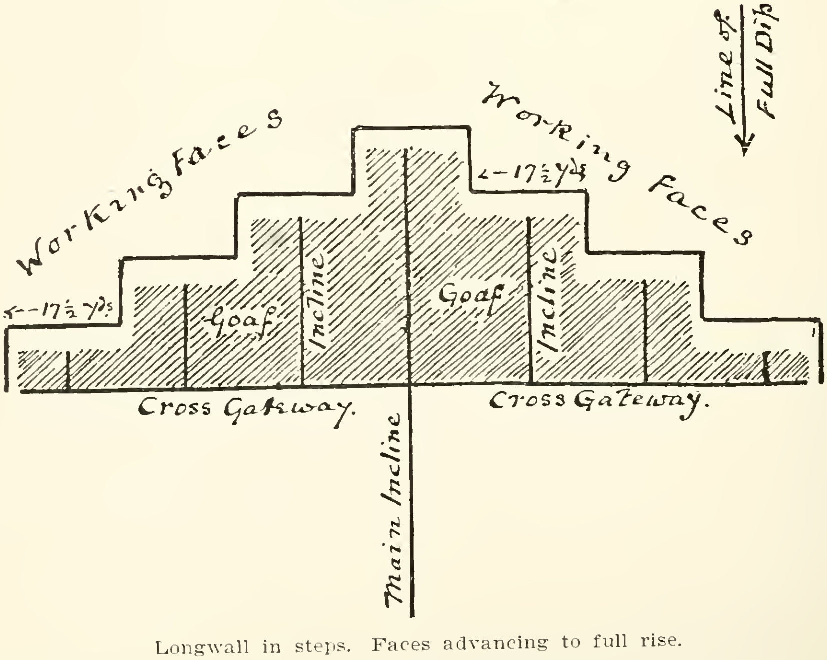
"The principle of timbering the working places, is to place 'bars' 10 to 13 feet long against the roof at intervals of 3 feet 3 inches, and support each bar by props at distances of 3 feet 3 inches from each other. Contrary to the usual practice, the bars are placed parallel to the working face and not at right angles to it. The roof between two successive 'bars' is protected by light poles stretching from 'bar' to 'bar' and about 18 or 20 inches apart. As in the case of roadways, small cross pieces of timber are laid from pole to pole when the roof is very bad * * Between the last 'bar' and the actual working face the roof is supported temporarily by iron bars 4 feet 3 inches long by 1⅝ inches square, the leading ends of which are flattened to a chisel edge. These are pushed forward until they almost touch the working face. When an advance of rather more than 3 feet has been accomplished under this provisional means of

FIG 1.



Longwall in steps. Faces advancing on level course.

FIG. 2.



Longwall in steps. Faces advancing to full rise.

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"The Louise seam, where we saw the system of timbering in operation, consisted of 20 inches of top coal, then 24 inches of hard clay and 28 inches of bottom coal, and it was dipping at an angle of 30°, and the depth from the surface was about 300 yards. The working places we inspected were in a part of the mine where the seams are completely overturned; the actual roof being formed by the underclay containing many slippery joints or 'backs' and occasional potholes. The miner is paid by the ton of coal raised, and the price he receives includes packing the rubbish behind him, and all the work of timbering. His output is about 3 tons 4 cwt. of coal per shift. The coal is 'got' by pick and not blasted, consequently there is no fear of the timber close to the face being knocked out by shots * *

"In the workings we inspected, the goaf was packed full, some of the material required being brought from other parts of the mine, and none of the timber withdrawn. We were informed that it was left because it did not pay to 'draw' it and not for reasons of safety. The general practice is to stow the goaf completely full and leave the timber in, except in seams which are comparatively flat and over 4 feet in thickness. In the latter case the timber is recovered so far as is consistent with safety. Rather more than two-thirds of the total output of coal is got from workings where the goaf is fully stowed and the timber left in * * When the timber is 'drawn' the work is done by special workmen who are provided with three special tools in addition to a sledge. The first (Figs. 3 and 4) has a hammer head about 9½ inches long, one end for striking and the other pointed for sticking into pieces of timber; the top is serrated so as to grip a prop firmly when it is employed to shove it out. The second (Fig. 5) with two pointed prongs.

"The third a cutting chisel which is for cutting the edge of the hollow of the 'post' in which the 'bar' rests in cases where the 'post' rests where the 'post' cannot be knocked out. (Figs. 6 and 7.)

"A is the cutting edge of the chisel and B the butt end which is struck with a sledge. The tools are made entirely of iron or steel and are 8 feet long.

"As might be expected from the account just given, the cost of tim-

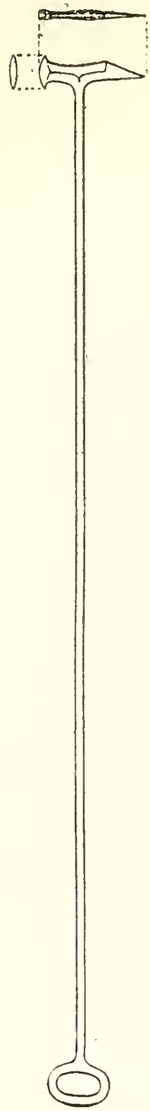


FIG. 3.

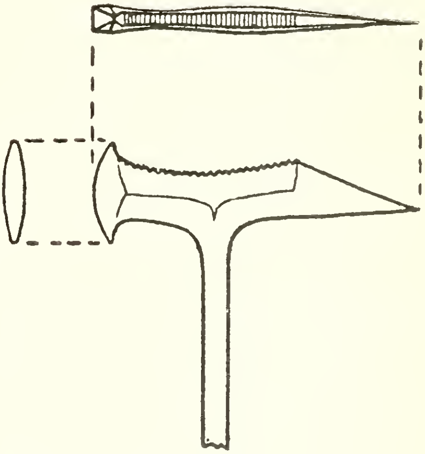


FIG. 4.*

FIG. 5.

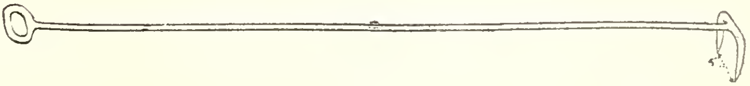
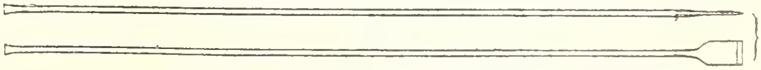
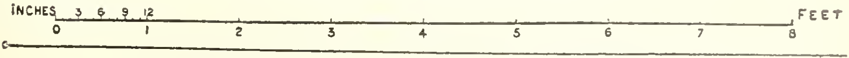


FIG. 6.

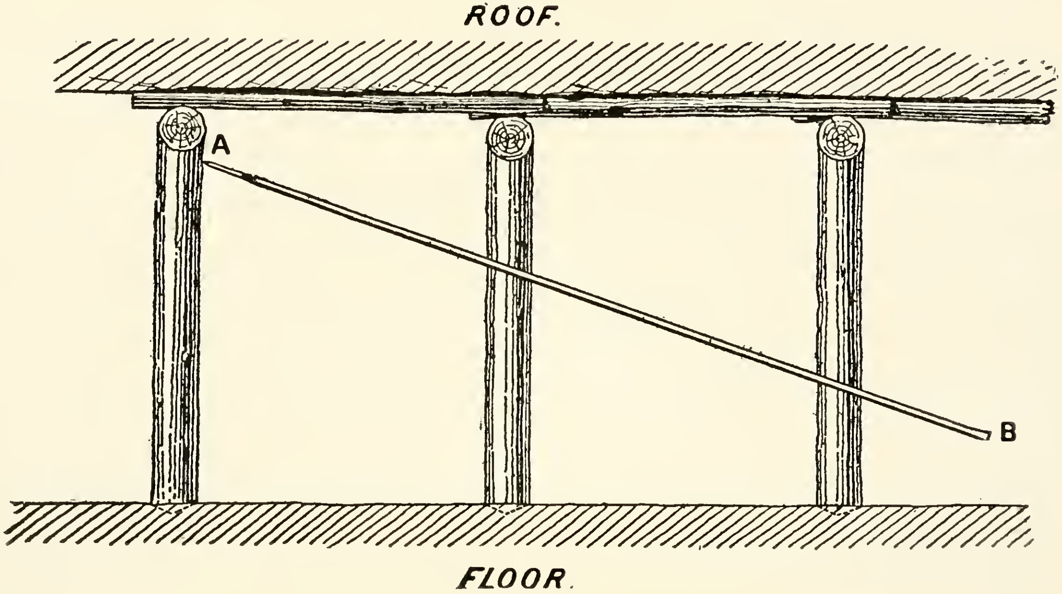


SCALE OF FIGURES 3, 5, AND 6.



* The scale of Fig. 4 is three times as large as that of Figs. 3, 5, and 6.

Fig. 7.



bering is high, the average cost at the Courrieres, irrespective of the cost of setting (which as already stated is included in the tonnage price) is about 18 cents per ton of coal. As steel sleepers are used, the timber bill has to be paid solely for the purpose of support * * The main point requiring attention and the one which in the opinion of the Courrieres engineers most largely conduces to the prevention of accidents, is that supports must be put in as soon as there is room. and under no pretext may the timbering be delayed 'until a more convenient season,' as is often the case in British collieries. We learned from M. Fevre, the Government Inspector of Mines, that systematic timbering is practically universal in the collieries of northern France, and indeed in French collieries generally. With reference to the temporary iron bars, such as are used at Courrieres, we found that the use of temporary supports in advance of the permanent timbering is not confined to the Courrieres Collieries, as we had the opportunity of seeing at one of the collieries belonging to the Lens Company, small steel girders in general use for precisely the same purpose; these light and handy steel girders are a great improvement on the square iron bars. M. Reumaux, the Director General of the Lens Company and one of the foremost engineers of France, has kindly supplied an account which we have translated, and which with his permission we reproduce. It is important in reading M. Reumaux' conclusions to know that the Lens Company is the second largest in France, employing more than 11,000 persons * * his opinion, therefore, must be entitled to great consideration, and when he tells us that accidents from falls of roof have diminished by one-half where the small steel girders (corresponding to the iron bars at Courrieres) have been introduced, and that he proposes gradually to enforce their use throughout his collieries, it would be difficult to obtain stronger testimony in their favor."

The conclusions that this learned commission arrived at are as follows:

"(1). The diagrams printed * * fairly represent the timbering as it is done day by day at the Courrieres, under the worst roofs * *

"(2). The system of supporting the roof at the Courrieres Collieries may be divided into two parts, viz:

"(a). Systematic timbering with the timber inserted as soon as there is room for it.

"(b). The use of temporary iron bars to support the roof in advance of the last 'setting' of timber until there is room for another 'setting.'

"(3). The immunity from accidents at Courrieres is not by any means due to naturally favorable conditions of the roof, but results chiefly from the extreme care taken of it. The Courrieres roof which we saw was certainly not good, and the great degree of safety attained is the strongest possible argument in favor of 'systematic timbering.'

"(4). We agree with the emphatic opinions expressed by the French engineers as to the necessity of enforcing, not only systematic timbering but also the setting of the timber immediately when the distance fixed by regulations has been attained.

"(5). We are distinctly of the opinion that more supports are fixed at the Courrieres to support the roof than is generally the case at home. Excellent timbering may of course be seen at home, but the important difference is that at the Courrieres the roof is regularly and at all times 'close timbered;' while in this country under similar roofs, the timbering is generally left to the discretion of the workmen, and is seldom so close, and is rarely fixed as soon as possible. It is only by adopting and enforcing some regular system of propping, that it is possible to insure the necessary supports being put in without dangerous delay."

This method of timbering can be adopted with slight modifications in all coal mines, especially in the bituminous mines of this State where the coal is being mined by pick, and with a little more modification can be adopted where coal is mined by machines. While it cannot be adopted in the very thick and heavy pitching anthracite seams, with some modifications it can be used with success in the low anthracite seams. The great loss of life from "falls" demands some remedy at once, as it is plain that the present system has been a failure. Our American Mining Engineers can inaugurate a system suitable to meet all conditions in the anthracite and bituminous mines, and neither expense nor labor should be allowed to interfere.

It can be seen by consulting the following tables of comparison that the loss of life by "falls" during the five years, 1895-1900, has been lower in the Courrieres Collieries than in France generally, or in Great Britain, Prussia, Illinois, Pennsylvania; bituminous and anthracite. The Courrieries had only 0.126 deaths by "falls" per 1,000 employed inside, while in the bituminous mines of this State the death rate from "falls" was 1.34 per 1,000 employed inside, and in the anthracite mines the loss was still greater, being 1.50 deaths per 1,000 employed inside. I cannot expect that the loss of life from "falls" can be reduced in either the anthracite or bituminous mines of this State, to the degree that it has been in France, viz: 0.58 deaths per 1,000 employed inside, until some radical change is adopted in the method of securing the roof and sides, and even then there must be daily supervision by competent foremen or assistants.

Comparative table showing the death rate from falls of roof and sides in the United Kingdom per 1,000 persons employed in coal mines from 1895 to 1899 inclusive.

Years.	Inspection Districts by Numbers and Names.													
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	
	East Scotland.	West Scotland.	New Castle.	Durham.	Yorkshire and Lincolnshire.	Manchester.	Ireland.	Liverpool.	Midland.	North Staffordshire.	South Staffordshire.	South Western.	South Wales.	Average for United Kingdom.
1895,	.89	.70	.46	.66	.54	.97	....	.97	.33	.84	1.27	.89	1.08	.75
1896,	.80	.98	.66	.55	.54	.78	....	1.05	.51	.99	1.05	.76	1.01	.76
1897,	1.00	.97	.82	.83	.71	.90	....	1.07	.51	.74	.78	1.01	1.07	.86
1898,	.66	1.09	.38	.79	.68	1.29	1.40	1.19	.61	.89	.73	.61	.73	.76
1899,	.81	.64	.65	.91	.48	.90	2.73	.82	.62	.79	.84	.63	.98	.75
Total,	.83	.88	.59	.75	.59	.96	*.82	1.02	.52	.85	.94	.78	.97	.78

*Coal mining in Ireland is on a small scale.

Comparative table showing the death rate by falls of roof, coal and sides per 1,000 persons employed in the coal mines of Pennsylvania in each inspection district, from 1895 to 1899 inclusive.

Years.	Anthracite Districts.								
	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Average.
1895,	1.35	1.41	1.73	1.34	1.30	1.21	1.34	1.06	1.34
1896,	1.99	1.28	*5.71	.96	1.02	1.19	1.53	.90	1.82
1897,	2.10	1.50	1.22	1.13	.53	1.57	1.83	.81	1.34
1898,	1 90	1.20	1.72	1.41	1.64	1.24	1.56	.69	1.42
1899,	2.62	1.68	2.15	1.69	1.26	1.25	1.08	1.02	1.59
Total,	1.99	1.42	2.51	1.31	1.05	1.29	1.48	.90	1.50

*Caused by Twin Shaft disaster, in which 58 persons were buried by a fall of roof.

Years.	Bituminous Districts.										
	First.	Second.	Third	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Average.
1895,	1.80	1.87	.64	1.16	.48	.56	1.22	1.23	1.52	.78	1.13
1896,	2.99	1.63	.50	1.24	1.18	1.37	1.32	.69	1.20	0.00	1.21
1897,	1.50	1.22	.98	.62	1.96	.77	2.01	.48	1.87	1.09	1.25
1898,	2.88	1.28	.46	1.10	.86	1.24	1.55	1.03	2.82	1.41	1.46
1899,	3.44	1.55	.48	1.55	1.91	1.12	2.62	1.30	1.85	1.38	1.72
Total,	2.52	1.51	.61	1.13	1.24	1.01	1.74	.95	1.84	.93	1.35

Comparative table showing the death rate from falls of coal, roof and sides per 1,000 employes inside the coal mines in the following counties and States from 1895 to 1899 inclusive.

Years.	Ratio Killed per 1,000 Employed.						
	Courrieres Collieries, France.	France.	United Kingdom, England, Scotland, Wales, Ireland.	Prussia.	State of Illinois.	Bituminous mines in Pennsylvania.	Anthracite mines in Pennsylvania.
1895,	....	.53	.75	1.28	1.10	1.13	1.34
1896,	.23	.54	.76	1.15	1.24	1.21	1.82
1897,	.22	.66	.86	1.08	1.52	1.25	1.34
1898,	....	.50	.76	1.29	1.36	1.46	1.42
1899,	.18	.67	.75	1.29	1.54	1.72	1.59
Average,	.126	.58	.78	1.22	1.34	1.35	1.50

NOTE ON THE EMPLOYMENT OF IRON BARS BY M. REMAUX, DIRECTOR GENERAL OF THE LENS COLLIERIES, FRANCE.

After many years of trial in different kinds of ground, and under different conditions, we have adopted and rendered compulsory at No. 6 Pit, the employment of iron bars in driving roadways and in getting coal. The iron bars which we use in the working places are formed of double T iron about 4 feet long as is shown in the sketch marked (Fig. 1).

The front edge is made by heating that end of the bar and flatten-it with a hammer until the two flanges are welded together as seen in Fig. 1. The bar weighs about 11 pounds; in other words it is handy and the cost would equal about forty cents American money.

The manner in which a working place is timbered is as follows:

We will take the time when a workmen is about to excavate coal; we shall see that along the working face immediately under the roof there are a series of timber "bars" each supported by three upright props; the timber "bars" are 8 feet 2 inches long and should overlap sufficiently so that the last A for instance, should be in the same plane at right angles to face, as the last bar B of the preceding set (Fig. 2).

The workmen begins to cut away the coal under the roof in front of him, and would therefore soon find himself underground without support were it not for the iron bar. As soon as he has uncovered one foot of roof he pushes his iron bar between the roof and the last wooden bar which has been put up, but in order to do this he must have left room for the iron bar to pass, and we have therefore been obliged to require that above each prop supporting the timber bar the workmen should put in a big wooden wedge, as he would have to do in any case in order to tighten up the timber bar properly (Fig. 3).

From this figure a first reason for the chisel-like end of the iron bar will become apparent. It is evident that if it did not exist the bar would not bear fully against the roof in the first part of the process of excavation; it is with this object that the workmen places the iron bar with the web vertical, and the flattened end upwards. As soon as part of the roof has been uncovered by the removal of the coal, the workman should push on the iron bar and fix it against the roof by means of wedge K, and we usually require that the edge of the bar shall not be more than eight inches from the face. The workman is provided with three iron bars which he drives out in front

FIG. 1.

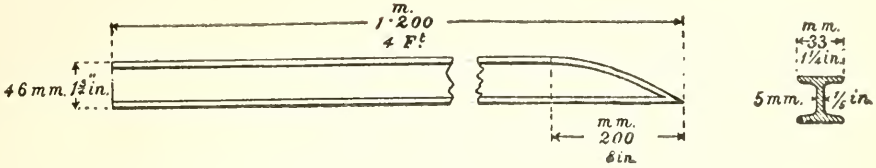


FIG. 2.

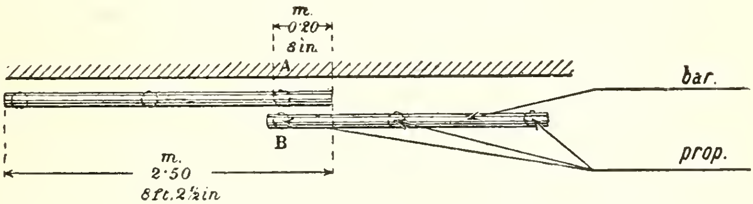


FIG. 3.

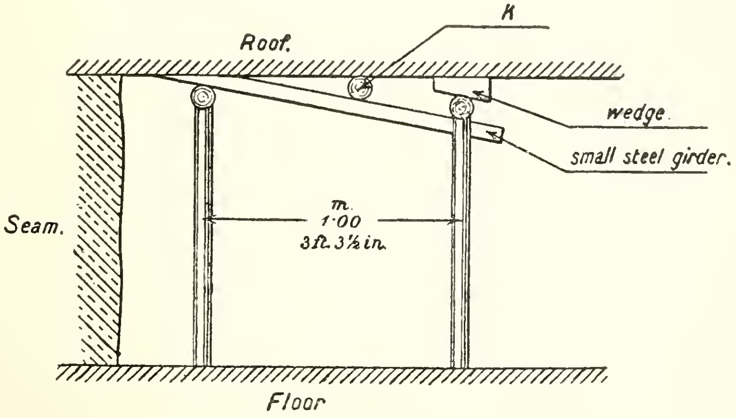


Fig. 4.

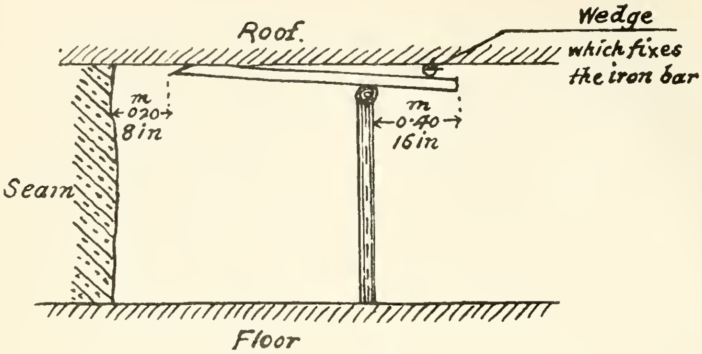


Fig 5.

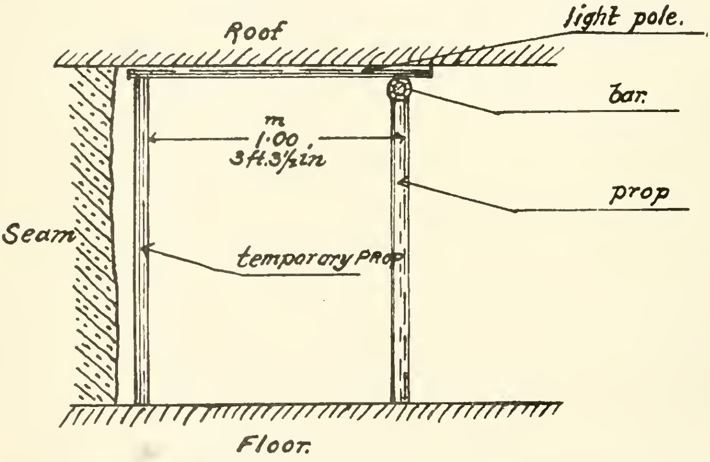
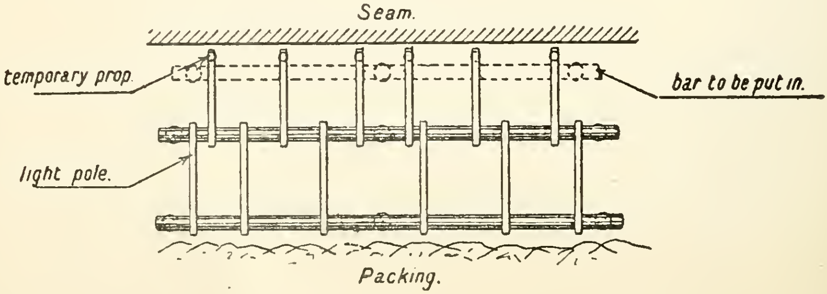


Fig. 6.



of him at a distance of 20 inches from one another. When he has excavated 3 feet 3½ inches, the iron bars still have 16 inches projecting behind the timber bar, and will be firmly fixed against the roof by the wedge (Fig. 4).

The workman now passes a light pole by the side of the iron bar, pushes it on to the face of the coal and supports it by a temporary prop (Fig. 5).

He does the same by the side of his other two iron bars, and then withdraws all three, and moves sideways in order to continue his work of excavation, consequently when his work is finished, he has behind him a timber bar over which has been passed six light poles held up by six temporary props (Fig. 6).

Then he goes and brings a timber bar and after having firmly supported it by the three regulation props, he takes down the six temporary props; he will therefore have completed his excavation without having once been under any unsupported roof.

We may here remark that fixing the length of the iron bar at 3 feet 11¼ inches is justified by the reason given; that is to say, that there is always a heel or butt end of 16 inches for fixing it firmly, and that the chisel edge is useful not only for supporting the first few inches of roof which have been laid bare, but also for enabling the iron bar 3 feet 11¼ inches in length, to be put in and drawn out easily between the two rows of props of parallel timber bars 3 feet 3½ inches apart.

The description given is of purely diagrammatic character and has simply for its object to explain the principle on which the irons are employed; but this system lends itself with elasticity to all the applications required at the working faces, whether they advance to the full rise or along the level course, and whether the ground be good, bad or indifferent.

When making a roadway by cutting away (ripping) the roof after the excavation of the coal, we likewise employ iron bars. The workmen, called "brushers" have three square iron bars 1½ inches on the side; they are very heavy and we propose to replace them by iron bars of the same kind as those employed in "getting" (mining); the only difference will be their length. Experience has shown us that the iron bars employed by the brushers should be 5 feet long. After the shot has been fired, the manner of using them is precisely the same as before. The brusher passes his three iron bars over the last timber bar and pushes them on in proportion as he beaks down the ground, and in such manner that he is always protected * * *

Results: The experience of several years has proved that the employment of iron bars has reduced in very notable proportions the accidents from falls of roof or side in the working places. The reduction in the number of persons injured from this cause is certainly more than 50 per cent.

EXTRACTS FROM THE OFFICIAL REGULATION FOR THE COURRIERES COLLIERIES.

Part III.

Getting coal and timbering the working faces; heightening the roadways (ripping) and timbering them.

Article XIV.

Working miners employed in getting coal should, before everything pay attention to the state of the solidity of the ground, and the condition of the timbering. Before beginning their work, they must examine whether the timbering placed before their arrival has been disturbed accidentally, and before doing any other work, they must remedy anything which appears to be defective. The timbering must always be sufficiently strong and be kept as close as possible to the working face. It must follow the "getting" immediately, and must be placed for the whole height or width of the face before the workmen go away.

As it is impossible to draw up precise rules with regard to the precautions to be observed in timbering the working places, the workmen must obey implicitly all measures of safety prescribed by the foreman for this purpose * *

Article XV.

In heightening the roadways (ripping) the workmen must never take out the timber supporting the roof until he has made the sides safe. The workmen who are packing the goaf shall keep inside the working faces, where the stones shall be thrown by the "Brushers," and they shall not stand under the roof which has been laid bare. The foreman for this purpose, must keep himself informed by frequent and daily visits as to the condition of all the roadways in his district; he must see that repairs are executed if there is any danger of a fall of roof or side, especially where several sets are broken one after another. He must see that the roadways are always kept sufficiently wide. * * He must stop the travel and cause the workmen to leave the roadways and the working faces, where the roof is * * * causing anxiety. He must himself "sound" with the pick, which he must always carry, the sides of the roadways where the rock is left bare, and must at once give orders to take down or to support any parts which he finds insecure * * *

* * * In driving through heavy falls, none but experienced

workmen must be employed and they must protect themselves with stronger iron bars than usual. * * *

It is always a miner and not a laborer who is charged with work of this kind. None but special workmen shall be employed in "drawing" timber, and instructions how to work shall be given them by the foremañ; orders shall be given to sacrifice any pieces of timber which cannot be removed without endangering the safety of the workmen.

Nationality by birth of employes who were killed and fatally injured in and about the mines of the Anthracite region from 1892 to 1901 inclusive.

Years.	Americans.	English.	Welsh.	Scotch.	Irish.	Germans	Poles.	Hungarians.	Italians.	Slavs.	Lithuanians.	Austrians.	Russians.	Greeks.	Swedes.	French.	Tyroleans.	Bohemians.
1892,	83	33	40	2	63	18	96	43	14	9	9	3	3	2	....	....	....	....
1893,	73	36	41	1	75	25	120	39	19	15	3	6	1	....	1	1	....	....
1894,	76	37	43	4	76	27	91	62	16	2	1	7	2	....	2	....	....	....
1895,	78	18	30	1	73	23	113	51	18	4	4	4	1	3	....	....	....	....
1896,	86	33	38	3	87	17	132	61	11	3	8	6	7	8	1	1	....	....
1897,	63	31	38	....	77	22	107	44	12	7	6	7	2	4	3	....	....	....
1898,	73	21	47	7	58	22	114	36	8	7	....	9	12	....	1	....	....	....
1899,	90	27	30	7	67	15	152	27	13	6	5	10	4	1	5	....	1	1
1900,	92	20	23	4	43	21	104	18	24	19	17	7	14	2	....	1	2	....
1901,*	135	22	24	2	58	*16	139	27	25	25	22	8	7	....	....	2	1	....
Total,	849	278	354	31	677	206	1,168	408	160	97	75	67	53	20	13	5	4	1

*I have arranged the nationalities of the above table for the 1901 report intotwo groups; the first comprises the Americans, English, Welsh, Scotch, Irish and Germans; all the other nationalities are in the second group.

The first group numbered 84,660, and the second 62,991, making a total of 147, 651 persons employed inside and outside of the anthracite mines.

I have received practically a complete list of all the different nationalities, and it agreed with the number of employes as given by the operators for December, 1901.

From the first group 257, and from the second 256 persons lost their lives in and about the mines. The second group suffers by comparison of fatalities. The first group shows that 3.03 persons lost their lives for every 1,000 persons employed, while the second group shows that 4.06 persons lost their lives for every 1,000 employed, an average loss of life of 3.54 for every 1,000 persons employed in and about the anthracite mines.

If the first group comprised all the employes, and the ratio of fatal accidents remained the same, the number of fatalities would have been 448, a reduction of 65, or 12.64 per cent.

I have no facts to back up these statements, except the above figures and similar figures in my last report, yet I am firmly of the opinion that a better knowledge of coal mining and a more thorough knowledge of the English language would have a great tendency to reduce the number of accidents in the second group.

Statistical Table Showing Number of Employes Inside and Outside the Anthracite Mines; the Number of Fatal Accidents; the Number of Fatal Accidents per 1,000 Persons Employed; and the Production in Tons per Fatal Accidents Inside for the Years 1881-1901.

Years.	Number of employes inside of mines.	Number of fatal accidents inside.	Ratio of lives lost inside, per 1,000 employed.	Production in tons of 2,000 lbs. for every life lost inside of mines.	Number of employes outside of mines.	Number of fatal accidents outside.	Percentage of lives lost outside, per 1,000 employed.
1881,	45,619	234	5.13	144,594	30,412	39	1.28
1882,	50,764	250	4.93	138,285	31,436	41	1.30
1883,	56,268	274	4.87	135,666	35,153	49	1.40
1884,	61,922	286	4.68	127,507	39,151	46	1.75
1885,	62,901	290	4.61	129,456	37,419	42	1.22
1886,	63,930	236	3.69	161,662	39,114	43	1.10
1887,	67,716	270	3.99	154,045	38,801	46	1.18
1888,	78,688	317	4.03	147,313	43,530	47	1.08
1889,	74,178	339	4.35	132,819	45,486	58	1.28
1890,	73,613	323	4.40	139,019	46,366	55	1.16
1891,	76,569	372	4.85	133,406	46,739	56	1.19
1892,	81,953	361	4.40	141,689	48,212	57	1.18
1893,	86,387	388	4.49	126,186	51,682	68	1.30
1894,	87,901	368	4.19	143,198	52,038	78	1.52
1895,	89,059	374	3.98	161,999	54,031	67	1.24
1896,	94,978	430	4.53	125,216	55,320	72	1.30
1897,	95,812	372	3.88	141,346	53,745	51	.90
1898,	91,171	360	3.96	146,668	51,245	51	.99
1899,	92,223	389	4.22	155,773	48,433	72	1.49
1900,	94,140	358	4.26	160,233	49,676	53	1.07
1901,	98,464	441	4.47	152,142	49,217	72	1.46

Statistical Table Showing the Number of Miners, Miner's Laborers employed in the Anthracite Mines, the Number and Rates of Each Class Killed per 1,000 Employed, the Average Number of Days Worked by Breakers, and the Average Production per Day Worked for the Years 1881-1901.

Years.	Number of miners employed each year.	Number of miners killed.	Ratio of miners killed per 1,000 employed.	Number of miners' laborers employed each year.	Number of miners' laborers killed each year.	Ratio of miners' laborers killed each year per 1,000 employed.	Average number of days worked by breakers each year.	Average production per day worked by breakers.
1881,	22,809	114	4.99	16,726	70	4.19	221	136,696
1882,	22,843	135	5.91	15,229	56	3.66	218	141,593
1883,	25,319	136	5.37	16,879	67	3.97	232	149,552
1884,	27,100	132	4.87	19,606	81	4.13	192	169,590
1885,	28,305	160	5.65	20,128	86	4.27	204	164,318
1886,	25,970	131	5.04	17,068	68	3.98	196	173,693
1887,	29,558	102	3.45	17,548	57	3.25	208	178,544
1888,	34,547	169	4.89	21,952	87	3.96	218	191,002
1889,	30,504	194	6.36	19,368	79	4.08	197	198,049
1890,	28,936	136	5.05	18,620	95	5.10	210	190,901
1891,	30,552	180	5.89	19,590	119	6.07	213	208,079
1892,	30,779	189	6.14	22,110	120	5.43	202	225,312
1893,	32,881	195	5.93	22,853	108	4.73	202	233,562
1894,	33,357	218	6.54	23,942	91	3.80	175	260,035
1895,	34,553	179	5.18	24,638	115	4.67	187	273,823
1896,	37,003	204	5.51	26,350	134	5.09	170	282,790
1897,	36,932	210	5.69	27,277	99	3.63	151	310,309
1898,	36,377	176	4.84	24,060	124	5.15	151	312,219
1899,	36,421	199	5.46	23,946	114	4.76	179	301,867
1900,	36,832	184	4.98	24,613	95	3.86	176	291,007
1901,	37,804	224	5.92	26,265	122	4.64	195	308,000

Statement Showing the Production of coal in Tons of 2,000 Pounds the Number of Tons Produced per employe Inside, the Quantity of Explosives used, and the Number Tons Gotten for Each Pound of Explosives Used in the Anthracite Mines From 1892 to 1901 inclusive.

Years.	Production of coal in tons of 2,000 lbs. for each year.	Average number of tons per employe inside.	Number of pounds of black powder used each year.	Number of pounds of dynamite used each year.	Average number of tons of coal produced per pound of explosives used.
1892,	51,226,977	647	30,981,875	1,092,190	1.59
1893,	52,841,110	625	31,723,771	1,324,142	1.60
1894,	50,966,920	611	30,755,450	1,713,235	1.57
1895,	57,351,840	600	32,766,775	1,797,494	1.61
1896,	53,893,259	644	32,117,950	1,733,970	1.59
1897,	52,531,036	567	31,804,950	2,415,650	1.50
1898,	52,302,594	534	30,670,100	3,025,015	1.57
1899,	60,518,231	655	34,317,275	3,649,417	1.59
1900,	57,363.396	682	30,929.500	3,454,641	1.61
1901,	67,094,665	680	38,020,100	4,155,685	1.59

Number of gaseous and non-gaseous mines, number of foremen, assistants and fire bosses, production from gaseous and non-gaseous mines and washeries and percentage of production from each, in the Anthracite region for 1900.

Districts.	Number of gaseous mines in each district.	Number of foremen and assistant foremen in gaseous mines in each district.	Number of fire bosses in each district.	Number of non-gaseous mines in each district.	Number of foremen and assistant foremen in non-gaseous mines in each district.	Production in tons from gaseous mines in each district.	Production in tons from non-gaseous mines in each district.	Production in tons from washeries in each district.	Percentage of production from gaseous mines.	Percentage of production from non-gaseous mines.	Percentage of production from washeries.
First,	15	27	43	26	39	2,705,145	3,480,728	183,075	54.65	42.47	2.87
Second,	38	56	86	3	3	5,708,715	94,136	626,261	88.79	1.46	9.74
Third,	44	67	108	6	6	5,714,775	298.160	283,996	90.75	4.73	4.51
Fourth,	46	53	160	4	4	8,263.472	225,163	97,106	96.24	2.62	1.13
Fifth,	24	48	39	18	21	4,284,553	1,667,975	218,256	69.43	27.03	3.53
Sixth,	39	56	137	6	6	6,474,111	354,188	192,273	92.21	5.04	2.74
Seventh,	37	82	139	7	8	5,656,941	336,264	77,497	93.18	5.53	1.28
Eighth,	27	40	96	6	6	4,022,231	136,240	116,057	94.10	3.18	2.71
Total and percentage,	270	429	808	76	93	42,829,942	6,592,854	1,794,521	83.62	12.87	3.50

STATEMENT, Showing the quantity of coal produced by each company which produced more than 700,000 tons, the number of persons employed by said companies in the Anthracite Districts during the year 1900.

Names of Companies.	Number of Inspection Districts.	Production in tons.	Number of employes.
Philadelphia and Reading Coal and Iron Co.,	Sixth, Seventh and Eighth,	8,279,279	25,427
Delaware, Lackawanna and Western Railroad Co.,	First, Second, Third and Fourth,	4,922,735	11,774
Delaware and Hudson Canal Co.,	First, Second, Third and Fourth,	4,282,988	11,297
Pennsylvania Railroad Co.,	Fourth and Seventh,	3,232,952	12,188
Lehigh Valley Coal Co.,	Third, Fourth, Fifth, Sixth and Seventh,	3,138,972	8,472
Lehigh and Wilkes-Barre Coal Co.,	Fourth, Fifth and Sixth,	3,079,828	7,568
Pennsylvania Coal Co.,	First, Second and Third,	2,221,367	6,885
Lehigh Coal and Navigation Co.,	Fifth and Eighth,	1,981,946	4,207
Temple Iron Co.,	First and Third,	1,328.134	3,901
Cross Creek Coal Co.,	Fifth and Sixth,	1,246,617	3.018
Markle Bros. & Co.,	Fifth,	1,030,628	2.256
Kingston Coal Co.,	Fourth,	912,569	2,226
Hillside Coal Co.,	First,	738,415	2,043
Total,		36,396,430	101,262

The above thirteen companies produced 71.06 per cent. of the total anthracite production and employed 70.40 per cent. of the labor.

Number and percentage of each class of fatal accidents that occurred in and about the Anthracite coal mines from 1892 to 1901 inclusive.

	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	Grand Total.	Percentage.
By falls of coal, slate and roof,	192	199	187	189	255	204	186	226	175	226	2,039	52.08
By mine cars,	57	74	53	52	49	40	44	51	60	69	549	14.03
By explosions of gas,	57	45	29	31	41	36	33	28	38	33	371	9.51
By explosions of powder and blasts,	36	41	46	51	37	48	35	38	43	51	426	10.81
By falling into shafts, slopes, etc.,	14	13	19	18	24	16	15	16	19	24	178	4.55
By being crushed at batteries,	....	1	1	3	2	1	....	2	....	1	11	1.31
By mules,	2	7	4	5	6	....	8	8	....	....	40	
By suffocation,	1	17	26	3	9	20	16	5	11	5	113	2.88
From miscellaneous causes,	20	19	20	11	9	17	28	23	9	32	188	4.80
Total accidents inside,	379	416	385	363	432	382	365	397	355	441	3,915	100
By cars,	19	14	23	26	18	21	15	26	28	19	209	38.21
By machinery,	11	13	13	15	17	9	14	12	10	12	126	23.00
By suffocation,	5	1	4	1	4	1	5	12	4	1	38	6.94
By boiler explosions,	....	2	10	4	9	....	2	....	....	1	28	5.12
From miscellaneous causes,	4	10	11	12	22	10	10	11	14	39	146	26.69
Total accidents outside,	39	40	61	58	70	41	46	64	56	72	547	100

AMENDMENTS TO THE ANTHRACITE MINE LAW.

The Legislature at its last session amended Article 2 of the above law, which was approved by the Governor on the 8th day of May, 1901. The amendment went into effect January 1, 1902. It provides for eight additional mine Inspectors, making the number sixteen.

Section 15 is as follows: "He (the Inspector) shall examine all the collieries in his district at least once every two months, and as often in addition thereto as the necessities of the case or the conditions of the mines require * * and he shall personally visit each working face, and see that the air currents are carried to the working faces * * He shall, every three months, make a report of the condition of each working face in each colliery * * to the Chief of Bureau of Mines * * designating the gangways in which the working is situated, and the breast number of such working, and their condition shall be designated by the words 'good,' 'fair,' or 'bad' * * He shall certify in said report that the employes are hoisted to the surface * * according to law * * he shall attend every inquest upon the bodies of persons killed * * he shall visit the scene of the accident * * wherever loss of life or serious personal injury occurs * *"

This amendment should have become effective January 1, 1903, instead of January 1, 1902, or else the law should have gone into effect on the day the Governor gave it his approval. As it is, the law provides work for sixteen inspectors during 1902, while only eight are commissioned, and the number cannot be increased until January, 1903.

While it would have been a physical impossibility for even the sixteen Inspectors, had they been on duty, to have fulfilled the requirements of this amended article, the eight Inspectors can only do as they have heretofore, their best, to keep secure the lives and property in and about the mines.

This amendment divides the anthracite coal fields into "Six Inspection Districts:" First, the county of Luzerne; second, the county of Lackawanna; third, the county of Carbon; fourth, the county of Schuylkill; fifth, the county of Northumberland, and sixth, the county of Columbia.

The amendment provides for five Inspectors for Luzerne, four for Lackawanna, four for Schuylkill, one each for Carbon, Northumberland and Columbia. All the additional Inspectors will be elected at the next general election, except one for Carbon county, for which the amendment provides as follows: "At the expiration of the term of office of any of the present Inspectors who hold office under the appointment of the Governor of the Commonwealth, the qualified electors of the Third Inspection District shall elect one inspector * *." I take this to mean that at the expiration of the term of the present Inspector, the qualified voters of the Third Inspection District shall elect one Inspector; but as the term of the present Inspector does not expire until September, 1906, the amendment will not take effect in Carbon county until January, 1907.

Why Carbon county was thus discriminated against, I am unable to say. There are other counties that this amendment does not provide for, by giving the qualified voters the same privilege of casting their votes for the inspector, that is given to the voters in larger counties. In my opinion, all counties, large or small, should have received the same treatment under the law.

The counties not named in the amendment are provided for as follows: "It shall be the duty of the Chief of the Bureau of Mines to direct one or more of the Inspectors * * to inspect collieries in such counties as are not mentioned in the law."

The counties provided for in the foregoing section are Susquehanna, Wayne, Sullivan and Dauphin. The first two counties are at present included in the First District, Lackawanna county, while Sullivan is part of the Third District, Luzerne county, and Dauphin is part of the Eighth District, Northumberland county. Part of Section 7 of the amendment reads: "Said Inspectors elected under this act shall be under the direction of the Chief of Bureau of Mines, who shall assign districts to the several Inspectors in the respective counties in which they are elected."

It can be seen that this Section only gives the right to the Chief of the Bureau of Mines "to assign Inspectors (only) in the respective counties in which they the (Inspectors) are elected; while part of Section 12 reads: "It shall be the duty of the Chief of Bureau of Mines * * to direct one or more of the Inspectors * * who shall be elected under the act to which this act is an amendment, to inspect such collieries * * in counties not mentioned in the amendment * * in such manner and at such times as is required by law * *."

I am at a loss to know how both of these sections shall be obeyed, but I must choose the lesser evil by obeying Section 12. Under the law, no Inspector, even when sent under the authority of Section 12, will have the legal right to examine any mines outside of the county in which he is elected.

Under this amendment the best subdivision that can be made will be an unfair and arbitrary one, as the districts cannot be divided so as to give each Inspector equal duties to perform, and no fair division can be made while county lines are adhered to as boundary lines for the districts.

If a proper division could have been made under the amendment, each inspection district would have had an equal production of about 3,700,000 tons; the number of employes under the supervision of each Inspector would have been about 9,000; the fatalities would have averaged for each district about 32; while the non-fatal accidents would have averaged about 75 for each district.

By an inspection of the table following these remarks, which was arranged from the report of the Bureau for the year 1900, and which closely corresponds to that for 1901, it will be seen that the number of mines under each inspector will vary from 7 to 29; the production from 1,571,300 tons to 4,188,340; the number of employes from 4,239 to 15,105; the fatal accidents from 8 to 32 and the non-fatal ones from 14 to 89. The Inspectors who will have the lesser number of mines and employes, can easily live up to the letter of the law, while the others cannot by any possibility come near to complying with the provisions of this amendment. There should be some way by which the work of the inspectors can be more equally divided, otherwise the amendment itself should be further amended by the next Legislature.

Arrangement of Anthracite districts as authorized by the Act of Assembly approved June 8, 1901, arranged by the Chief of Bureau of Mines in accordance with the provisions of said act, on basis of number of mines production of coal, number of employes, number of accidents in contemplated districts, as shown by the report of the Bureau of Mines for 1900.

Counties Included in Proposed District.	Number of mines in each contemplated district.	Production of coal in tons in each district.	Number of employes in each district.	Number of fatal accidents in each district.	Number of non-fatal accidents in each district.	Number of inspectors.	Average number of mines in each district for each inspector.	Average production in tons in each district for each inspector.	Average number of employes in each district for each inspector.	Average number of fatal accidents in each district for each inspector.	Average number of non-fatal accidents in each district for each inspector.
First District. Luzerne, Sullivan,	142	19,389,495	52,539	162	445	5	28+	3,877,899	10,508	32+	89
Second District. Lackawanna, Wayne, Susquehanna,	82	12,798,062	34,074	95	270	4	20+	3,199,512	8,518	24—	67+
Third District. Carbon,	9	1,663,962	4,239	8	14	1	9	1,663,962	4,239	8	14
Fourth District. Schuylkill,	77	11,606,158	33,298	97	237	4	19+	2,901,539	8,324	24+	59+
Fifth District. Northumberland,	29	4,188,340	15,105	40	75	1	29	4,188,340	15,105	40	75
Sixth District. Columbia, Dauphin,	7	1,571,301	4,641	9	16	1	7	1,571,301	4,641	9	16
Total and average,	346	51,217,318	143,826	411	1,057	16	22+	3,201,082	8,927	26—	66+

Production of coal in tons by districts in the Anthracite coal mines, from 1892 to 1901 inclusive.

Districts.	1892.	1893.	1894	1895.	1896.	1897.	1898.	1899.	1900.	1901.
First, ...	5,854,638.30	6,202,131.34	5,907,331	6,510,817	6,217,417	6,249,833	6,515,790	7,374,571	6,368,918.16	7,728,344
Second, ...	6,013,537.19	5,936,475.10	5,674,539	6,189,495	5,895,669	5,985,630	5,496,150	6,774,458	6,429,112.00	8,674,060
Third, ...	5,659,730.09	5,629,914.85	5,541,952	6,213,834	5,714,929	5,875,823	5,964,467	6,854,711	6,296,931.08	6,925,598
Fourth, ...	7,549,605.02	8,065,768.95	7,162,961	8,066,539	8,017,852	7,457,418	7,866,277	8,618,152	8,585,741.05	9,891,332
Fifth, ...	5,842,724.19	6,239,058.50	6,132,627	6,590,966	5,872,427	5,487,550	5,555,850	6,191,027	6,170,784.00	6,374,939
Sixth, ...	6,287,366.06	6,674,807.00	6,340,631	7,161,898	6,521,510	6,475,930	6,513,155	7 538,404	7,020,571.05	8,086,320
Seventh, ...	5,584,678.17	5,288,892.88	5,404,823	6,184,512	5,594,649	5,108,918	5,074,834	6,308,334	6,070,701.06	7,052,828
Eighth, ...	3,066,092.00	3,142,504.63	3,331,315	3,925,013	4,239,847	4,306,222	4,158,651	4,344,567	4.274,528.00	5,172,530
Total, ...	45,858,371 02	47,179,553.25	45,496,179	50,846.104	48,074,330	46,947,354	47,145,174	54,034,224	51,217,318.00	59,905,951

Production of Anthracite coal in tons by counties from 1892 to 1901, inclusive.

Counties.	1892.	1893.	1894	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Carbon, ...	1,427,542.55	1,510,289.50	1,589,395	1,577,146	1,488,550	1,327,235	1,043,663	1,630,595	1,663,961	1,679,392
Columbia, ...	889,489.85	741,990.74	510,537	493,042	443,330	481,453	569,175	895,061	875,643	1,080,231
Dauphin, ...	639,879.00	610,723.17	699,607	712,856	702,335	662,842	667,460	729,757	695,656	741,582
Lackawanna, ...	11,410,553.95	11,667,550.25	11,170,382	11,859,382	11,638,479	11,946,871	11,588,801	13,248,949	12,282,108	15,409,049
Luzerne, ...	17,548,508.00	18,253,141.75	17,243,928	19,143,101	17,964,900	17,141,809	18,135,398	19,899,742	19,179,573	21,396,312
Northumberland, ..	3,724,233.70	3,731,404.63	3,893,660	4,573,141	4,117,569	3,774,667	3,519,305	4,339,547	4,188,343	4,849,009
Schuylkill, ...	9,564,534.60	9,992,208.97	9,985,092	11,495,388	11,092,772	10,971,943	11,980,700	12,226,938	11,606,160	13,640,763
Sullivan, ...	76,209.65	70,418.00	....	152,141	151,758	164,046	147,533	163,555	209,922	136,165
Susquehanna, ...	475,622.30	571,956.19	413,578	840,904	474,637	476,488	423,139	624,125	496,432	663,487
Wayne, ...	....	....	....	....	....	....	....	275,955	19,520	329,877
Total, ...	45,858,371.00	47,179,563.20	45,506,179	50,846,104	48,074,330	46,947,354	47,145,174	54,034,224	51,217,318	59,905,951

Number of employes in and about the Anthracite coal mines from 1892 to 1901, inclusive.

Districts.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
First,	14,121	15,637	16,014	16,272	17,604	18,066	17,890	17.143	17,285	18,773
Second,	14,111	14,429	15,627	16,269	16 353	16.578	15,725	15,419	16,789	18,023
Third,	15,020	15,779	16,965	17,413	15,577	17.926	18,098	17,156	18,600	17,654
Fourth,	21,406	22,790	22,764	24,669	26.059	25,650	23,377	23,668	23,067	24,317
Fifth,	16,477	17,540	18,361	18,467	17,568	17,119	14,649	14,293	15,111	16,108
Sixth,	20,608	21,872	20,109	19,810	20,979	21,056	20,159	19,905	20,278	20,277
Seventh,	18,437	19,197	19,121	19,399	20,185	19,670	19,557	20,317	20,655	19,844
Eighth,	10,417	10,777	10,734	11,306	13,335	13,492	12,965	12,682	12,041	12,655
Total,	130,197	138,021	139,695	143,605	147,670	149,557	142,420	140,583	143,726	147,651

Number of employes in and about the mines of the Anthracite region by counties from 1892 to 1901, inclusive.

Counties.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Carbon,	3,848	4,410	5,391	4,382	4,153	4,748	2,986	2,338	2,517	6,365
Columbia,	2,421	2,654	2,011	1,756	2,074	1,909	2,436	2,309	2,061	2,329
Dauphin,	2,104	2,094	2,092	1,985	1,988	2,072	2,174	2,390	2,577	2,353
Lackawanna,	27,233	29,021	30,629	30,367	32,771	33,892	32,422	30,886	32,813	35,298
Luzerne,	47,944	51,392	52,994	55,798	56,717	55,138	52,817	52,528	53,740	51,280
Northumberland,	12,835	13,487	13,870	14,522	14,787	15,139	13,833	14,697	15,105	14,187
Schuylkill,	32,099	33,611	31,696	32,292	35,660	35,098	34,238	33,508	33,228	33,907
Sullivan,	261	307	....	312	334	327	321	351	521	434
Susquehanna,	990	1,045	1,012	2,191	1,186	1,234	1,193	1,210	1,250	9 9
Wayne,	....	....	....	....	....	....	....	466	11	589

List of fatal accidents that occurred in and about the Anthracite coal mines from 1892 to 1901, inclusive.

Districts.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
First,	55	51	47	39	51	53	51	68	40	58
Second,	33	35	41	34	39	58	37	49	55	63
Third,	50	64	51	69	108	63	85	62	59	84
Fourth,	83	84	77	74	73	60	75	81	71	78
Fifth,	48	58	58	52	42	33	32	43	40	60
Sixth,	54	60	74	59	67	72	54	72	65	73
Seventh,	45	77	78	59	76	46	46	52	49	62
Eighth,	50	27	20	35	46	38	37	34	32	35
Total,	418	456	446	421	502	423	415	461	411	513

List of non-fatal accidents that occurred in and about the Anthracite mines from 1892 to 1901, inclusive.

Districts.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
First,	115	96	98	121	134	125	126	116	118	118
Second,	181	173	141	192	161	149	154	159	152	186
Third,	163	178	148	167	209	145	201	206	139	173
Fourth,	180	221	229	221	225	269	278	188	244	322
Fifth,	110	99	95	102	91	114	72	86	76	89
Sixth,	120	139	94	52	99	73	72	99	130	144
Seventh,	101	119	76	114	106	119	112	90	91	95
Eighth,	53	44	40	106	140	112	119	86	107	116
Total,	1,023	1,069	921	1,075	1.165	1,106	1,134	1,030	1,057	1.243

Classification of employes who were killed or fatally injured in and about the mines of the Anthracite region from 1882 to 1901, inclusive.

Years.	Inside Employes.								Outside Employes.						
	Mine foremen.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys, etc.	All others.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All others.	Total outside.	Grand total.
1882,	3	6	135	56	39	11	18	268	....	....	3	11	10	24	292
1883,	2	1	136	67	47	18	26	297	....	7	11	7	1	26	323
1884,	1	1	132	81	28	13	30	286	....	4	9	12	6	31	317
1885,	....	3	160	86	16	6	28	299	....	6	7	13	8	34	333
1886,	2	2	131	68	18	6	18	245	1	1	6	9	16	33	278
1887,	1	5	102	57	23	10	30	228	3	3	3	9	13	31	259
1888,	1	2	169	87	33	9	31	332	....	1	3	6	22	32	364
1889,	4	2	194	79	39	10	20	348	1	1	9	10	16	37	385
1890,	1	5	146	95	37	8	26	318	1	13	8	12	26	60	378
1891,	....	6	180	119	38	7	37	387	....	2	3	11	25	41	428
1892,	3	4	189	120	39	8	16	379	....	1	4	7	27	39	418
1893,	3	1	195	108	47	12	24	390	2	2	....	11	41	56	446
1894,	1	....	218	91	38	5	32	385	....	....	4	12	45	61	446
1895,	5	1	179	115	33	7	28	368	....	3	4	13	38	58	426
1896,	3	4	204	134	46	10	48	449	....	3	4	12	34	53	502
1897,	3	2	210	99	26	4	43	387	....	4	2	6	25	37	424
1898,	5	4	176	124	33	6	22	370	1	....	4	13	23	41	411
1899,	2	2	199	114	39	18	22	396	1	2	6	10	46	65	461
1900,	....	5	184	95	33	8	27	352	....	2	2	9	46	59	411
1901,	5	2	224	122	45	6	37	441	....	....	5	9	64	72	513

Number of fatalities and causes of fatal accidents that occurred in and about the mines of the Anthracite region from 1882 to 1901, inclusive.

Years.	Inside of Mines.														Outside of Mines.						
	By Falls		By mine cars.	By explosions of gas.	Powder and dynamite.	By blasts, etc.	By Falling Into			Crushed at batteries.	By mules.	By suffocation.	Miscellaneous causes.	Total inside.	By cars.	By machinery.	By suffocation.	By boiler explosions.	Miscellaneous causes.	Total outside.	Grand total.
	Of coal.	Slate and roof.					Shafts.	Slopes.	Manways and breasts.												
1882,	62	68	51	25	5	16	13	5	4	......	3	......	6	258	13	13	......	1	7	34	292
1883,	58	66	52	32	11	28	14	......	......	......	......	......	16	277	24	12	......	4	6	46	323
1884,	74	61	61	19	5	29	11	5	......	2	......	......	14	281	16	13	......	3	19	51	332
1885,	65	87	35	25	13	18	11	11	......	......	......	......	*53	318	19	9	......	7	5	40	358
1886,	67	61	35	24	7	18	5	3	......	......	......	......	20	240	12	11	......	5	10	38	278
1887,	74	75	49	19	7	14	9	1	......	......	......	......	26	274	17	11	......	1	12	41	315
1888,	85	89	58	20	11	24	9	3	......	......	......	......	20	319	16	12	......	......	15	43	362
1889,	81	100	58	29	10	24	3	5	......	......	......	......	20	330	27	14	......	6	8	55	385
1890,	67	70	56	60	3	16	17	8	......	......	......	......	29	326	25	9	......	7	11	52	378
1891,	75	97	59	39	13	33	11	6	1	2	4	17	30	387	12	14	......	2	13	41	428
1892,	88	104	57	57	7	29	6	1	7	......	2	1	20	379	19	11	5	......	4	39	418
1893,	80	119	74	45	11	30	7	2	4	1	7	17	19	416	14	13	1	2	10	40	456
1894,	83	104	53	29	18	28	13	5	1	1	4	26	20	385	23	13	4	10	11	61	446
1895,	66	123	52	31	24	27	7	7	4	3	5	3	11	363	26	15	1	4	12	58	421
1896,	68	†187	49	41	9	28	13	3	8	2	6	9	9	432	18	17	4	9	22	70	502
1897,	84	120	40	36	10	38	8	3	5	1	......	20	16	382	21	9	1	......	10	41	423
1898,	58	128	41	33	11	24	7	4	4	......	8	16	28	365	15	14	5	2	10	46	411
1899,	78	148	51	28	11	27	5	4	7	2	8	5	23	397	26	12	12	......	14	64	461
1900,	61	114	60	38	14	29	13	4	2	......	......	11	9	375	28	10	4	......	14	56	411
1901,	66	160	69	33	15	36	15	5	4	1	......	5	32	441	19	12	1	1	39	72	513
Total,	1,440	2,081	1,063	663	215	516	197	85	51	15	47	130	421	6,925	390	244	38	64	252	988	7,913

*Nanticoke disaster, 26 persons were entombed by an inrush of quicksand.
†Twin shaft disaster, 58 persons were entombed June 28.

Fatal Accidents per Each 1,000 Employes in and About the Anthracite Coal Mines, and Tons of Coal Mined for Each Fatal Accident From 1870 to 1901 inclusive.

Years.	Employes.	Fatal accidents.	Fatal accidents per 1,000 employes.	Number of tons of coal produced.	Number of tons mined for each fatal accident.
1870,	35,600	211	5.929	12,653,575	59,970
1871,	37,488	210	5.601	13,868,087	66,838
1872,	44,475	166	3.709	13,899,976	83,734
1873,	48,199	224	4.647	18,751,358	83,711
1874,	53,402	231	4.325	17,794,857	77,034
1875,	69,966	238	3.401	20,895,220	87,798
1876,	65,357	226	3.458	20,529,166	90,837
1877,	66,842	199	2.977	21,574,154	108,413
1878,	63,964	187	2.923	20,330,945	108,720
1879,	68,847	262	3.807	26,725,475	102,005
1880,	73,373	201	2.739	24,977,265	124,265
1881,	76,021	269	3.538	30,537,998	113,524
1882,	82,344	292	3.546	31.301,278	107,196
1883,	90,921	323	3.552	33,703,010	104,313
1884,	101,398	332	3.274	32,561,374	98,076
1885,	100,311	315	3.140	33,468,911	116,250
1886,	102.878	279	2.624	34,777,618	124,650
1887,	106,547	319	2.994	37,644,023	118,006
1888,	117,160	364	3.106	41,638,427	114,391
1889,	119,500	385	3.222	38,983,952	101,257
1890,	115,190	378	3.281	40,088,356	106,054
1891,	123,277	428	3.472	44,320,950	103,553
1892,	128,763	396	3.075	45,738,373	115,501
1893,	138,069	449	3.252	47,219,562	105,166
1894,	139,544	439	3.146	45,506,179	103,659
1895,	143,288	421	3.636	50,847,102	120,777
1896,	150,080	502	3.345	48,074,330	95,766
1897,	149,557	424	2.842	46,947,350	110,725
1898,	142,546	411	2.877	47.145,175	114,708
1899,	140,583	461	2.923	54,034,224	131,446
1900,	143,726	411	2.851	51,217,318	124,616
1901,	147,651	513	3.474	59,905,951	116,775

PROVISIONS FOR WIDOWS AND ORPHANS.

How to provide for the above is a question that has interested me for many years, and I wish to quote what I wrote upon the subject in my annual report as mine Inspector in 1882. These remarks I then considered of great moment, but at the present time this is a subject of much greater importance by reason of the fact that now there are people of twenty-five or twenty-six nationalities employed in and about the anthracite and bituminous mines of this State, who are aliens to our language, and strangers in a strange land:

"But how to provide for the widows and orphans of those who are killed in and about the mines is the all important question. A few of the miners have been enabled to accumulate a small sum as a provision for their families in case of their death, but they are only a few, and the majority of them leave their families completely destitute. All who are conversant with the subject are aware that the bereaved ones are tolerably well cared for, for a short time after the death of the husband and father, as some assistance is given by the operator, some by his former fellow workmen, a little by friends or relatives; but of course this does not last, and soon the poor woman is forced to the stern reality that they are indeed 'alone in the world.' But in justice I must assert that there are exceptional cases, where a kind hearted operator makes inquiry as to the welfare of the widows and orphans in the neighborhood of his works, and renders them assistance, and very often they do not know who their benefactor is; but these are exceptional cases. Something, however, should be done in a general way to alleviate the distress of this large class in every community throughout the anthracite coal region, as more fatal accidents occur that are incident to coal mining than in any other industry in the State.

"During the year 1881, 131 wives were left widows and 442 children were orphaned by accidents in and about the anthracite mines, which is nearly the yearly average for the past ten years.

"I do not wish to advocate any particular system, but think the system that prevails in Germany would be worthy the study of philanthropists, and perhaps from this, a law can be enacted to provide means of alleviating the distress of this class of sufferers."

In December, 1883, Mr. W. D. Zehner, the General Superintendent of the Lehigh Coal and Navigation Company inclosed to me a copy of the rules adopted by that company in conjunction with their employes, in the maintenance of a relief fund:

"Rules.

"This fund shall be created and maintained by the following contributions, to be made monthly:

"The Lehigh Coal and Navigation Company will pay into it one cent for every ton of coal produced at its mines. The inside workmen employed on its property will pay into it one per cent. of their earnings, and the outside workmen will pay into it one-half of one per cent.; but no one shall pay more than one dollar in any one month * * All moneys which shall be paid into this fund shall be placed in charge of a Board of Trustees to be appointed from time to time by the President of the Lehigh Coal and Navigation Company, and to be chosen by him, partly from the officers of the company and partly from business men of experience and good reputation in the mining region.

"A report of the receipts and expenditures of this fund shall be published by the Board of Trustees at least once in each year * * The fund thus established is believed to be ample to meet all claims arising from accidents to the contributors, and if, as is hoped, there shall be more than is required under this plan, the benefits will be increased as from time to time the trustees may think prudent.

"The Lehigh Coal and Navigation Company, in making this contribution and establishing this fund, desires to relieve the suffering which the accidents cause among its workingmen, and to render unnecessary the collections which make a heavy tax on the benevolent; and also to promote the growth of kindly feeling which now exists between the company and the men engaged in its service."

In my annual report for 1886, I find the following:

"During the years 1884, 1885 and 1886, the men and the company paid into this fund the sums of $28,217.88 and $30,912.22 respectively, to which $902.42 interest on investment was added, making the total receipts the sum of $60,032.25.

"The men who were injured, and the families of persons killed during the same years, received the sum of $42,059, and $902.42 were paid for expenses, leaving a cash balance on hand the first day of January, 1887, of $17,070.26."

Since writing the above, in response to an inquiry I have received the following letter from the Superintendent, Mr. Zehner:

"Mr. James E. Roderick, Chief of Bureau of Mines, Harrisburg, Pa.:

"Dear Sir: I have your letter asking about the formation and management of the Beneficial Fund of the Lehigh Coal and Navigation Company.

"I have been looking carefully into the matter in order to gather the facts which I think will be interesting to you.

"The Lansford Beneficial Fund was started on the first of January, 1884, by the adoption of certain rules and regulations.

"The fund out of which benefits are paid to disabled miners and to the widows and orphans of those killed in the service of the company, is derived from contributions from the employes who joined the association, and from the company.

"Originally the men working in the mines were assessed one per cent. of their wages not to exceed $1.00 per month.

The outside men were assessed one-half of one per cent. of their wages, and the company contributed one cent per ton of its production.

In 1894, the fund had accumulated to such an extent that the contributions were cut down one-half, at which rate they are now assessed, but the accumulation of the fund has been so nearly absorbed that in the near future it will be necessary to increase the contributions by one-half the present rate.

"In recognition of the loyalty of the employes of the company in refusing to participate in the strike, general throughout the anthracite region in 1900, the company presented to the fund a permanent endowment of $25,000.

"The following is a statement of the operation of the fund from its inception to December 31st, 1901.

"Amount contributed by the L. C. and N. Co.,	$192,616.39	
"Amount contributed by employes,	150,681 00	
"Interest account,	20,510 77	
		$363,808 16
"Benefits paid employes,	$308,613 70	
"Total expenses,	15,310 40	
		$323,924 10
		$39,884 06
"Invested,		$35,000 00
"Cash balance, Dec. 31, 1901,		4,884 06
		$39,884 06

"The benefits paid by the fund are as follows:

"In case of injury not resulting in death, one-half of the average earnings of six months preceding the accident are paid until the injured person is able to resume work or for a period not exceeding six months thereafter.

"In case of fatal accident, $30.00 are paid for funeral expenses and the family of the deceased is paid for eighteen months, one-half of his monthly average earnings for six months preceding the accident.

"While it is optional with the employes of the company to become members of the association, in point of fact, practically all of them are glad to contribute to the fund.

"Respectfully yours,

"W. D. ZEHNER, Supt."

With the coal mines in the hands of a few companies, it would be an easy matter to establish a fund such as that of the Lehigh Coal and Navigation Company's, which undoubtedly would relieve in a great degree the distress now existing about the mining communities of this State.

I have written the above from practical knowledge for the past thirty years of the conditions that have existed, but the half of the story of the dependent ones has never been told. We learn a great deal about the suffering in mining communities from the Metropolitan newspapers during periods of strikes and labor disturbances amongst the miners, but when peace is restored, the scribes return to the cities, not to appear again until another strike takes place about the mines.

EDUCATION AND TRAINING FOR THE YOUNG WHO ARE CRIPPLED ABOUT THE MINES, FACTORIES, ETC.

While on my travels through the mining districts of this State, I have been shocked at the great number of unfortunates who have been the victims of accidents in mines, factories, machine shops, etc., and have been greatly impressed with the need of some institution where these cripples can be educated and trained in suitable occupations that will enable them to earn a respectable living. I cannot do better than to quote part of my annual report as Inspector of Mines for the year 1882, nearly twenty years ago, which I considered applicable then, as it is to a greater extent now:

"The attention of all fair-minded people is called to the great necessity for providing education and suitable occupations for young men and boys who are incapacitated by accidents from earning their bread 'by the sweat of their brow.' There is an army of these cripples in the anthracite coal fields of Pennsylvania; some are minus a hand, others a foot or a leg, and exceptional cases are to be found where they are wanting both arm and leg. They are pitiful objects, indeed, when seen before the break of day, on winter mornings, on the way to their work in the breakers.

The young men and boys in and about the coal mines are as bright and intelligent as any class having the same opportunities, and I claim that if there were a way of educating them and giving them suitable occupations, according to their abilities, our State would be the recipient of unnumbered blessings in return for the outlay incident to the work.

Pennsylvania has provided nobly for the orphans of her gallant soldiers, by means of a thorough system of education; and these unfortunate victims of mines and manufactories could be prepared to hold some positions in life that do not require manual labor."

This appeal made nearly twenty years ago, caused only a passing notice by the press, and some of our good people thought the remarks were timely, yet nothing more was said or done, and no notice whatever was taken of them by the Legislature.

Stephen Girard cared nobly for the orphan children of Philadelphia, and other wealthy men have ever since been piling up large endowments for our colleges and universities, so is it too much to hope that a Carnegie, Rockafeller, Morgan, Schwab, Vanderbilt, Gould, Hanna, or some other wealthy man, or possibly a combination of men, who have acquired wealth from the mines, factories and workshops of our State, will join hands and do for these unfortunates of the mines, factories and workshops, and for all such unfortunates from every avocation in the State, what the honored Stephen Girard did for Philadelphia? Such institution or institutions, permanently established and properly endowed, would be a lasting monument to the donors, and I sincerely hope that some of our wealthy people will take time to look into the merits of the matter.

At the time this is being written, one of Philadelphia's millionaires is preparing to build and endow at his own expense, an institution for the care and education of crippled children, where they will be taught useful occupations such as will fit them, after a few years, to be self-supporting. It is estimated that the cost to him will amount to $2,000,000. Surely such an example as this is worthy of the emulation of men who have grown wealthy from the productions of the mines and manufacturing establishments in our State.

CHANGES RECOMMENDED IN THE REPORT OF THE BUREAU OF MINES.

I would most respectfully urge upon the next Legislature the advisability of providing for an increase in the number of copies of the Report of the Bureau of Mines now allotted to the Department of Internal Affairs. The demand for them is very great and is constantly increasing, as requests have been received for them from all sections of this Commonwealth where coal is mined, from every state in the Union in which coal is produced, and also from European countries, and even from far Australia and New South Wales.

Under an act of the Legislature of 1899, 2,000 copies were authorized to be given to the Department of Internal Affairs for distribution; of these, 1,400 are sent to the Inspectors of Mines, twenty in number at the present time. Under an amendment to the Anthracite Mine Law enacted by the Legislature of 1901, the number of inspectors in the anthracite region is soon to be increased from eight to sixteen, which will make the total number twenty-eight. It can be readily seen, therefore, that there will be an extremely limited numbr for each inspector if any number of them is to be kept on hand in the Bureau of Mines to supply the constant and increasing demand. With the small number allotted to each Inspector at present, some of them do not have one for each mine in his district, when there should be one for each mine foreman and fire boss, not to speak of the thousands of intelligent miners who are constantly asking for them, and who would greatly appreciate the favor if they could each have a copy.

There is another matter in connection with the publication of the report that I would most earnestly recommend, from an economical standpoint. The report is now issued in one part; in 1890 it covered 490 pages; in 1900 there were 874 pages. Now, as there will soon be sixteen anthracite Inspectors, together with twelve in the bituminous region, it can readily be determined to what dimensions the report will attain. If such legislation should be enacted as to permit the report to be published in two parts, it would be better and more economical. In very many cases, requests come from parties in the bituminous regions asking for copies of the bituminous mine law and a bituminous report, who do not care for the anthracite laws or reports, and in like manner persons from the anthracite region ask for anthracite reports.

If the reports could be published in two parts, each containing its own mine laws, it would do away with an unwieldy book, which will be too heavy for mailing, and the change would I am sure be more satisfactory to all concerned.

RECAPITULATION.

Total number of tons of coal mined and tons of coke produced, number of days worked, number of persons killed and injured, number of kegs of powder, etc., used in the Bituminous districts of Pennsylvania for the year ending December 31, 1901.

Districts.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at collieries.	Number of tons sold to local trade and used by employes.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Average number of days worked.	Number of persons employed.	Number of fatal accidents.	Number of non-fatal accidents.	Number of kegs of powder used.	Number of pounds of dynamite used.	Number of horses and mules in use.
First,	7,975,495	101,250	31,913	8,108,658	....	....	215	10,195	41	142	43,884	29,240	775
Second,	5,911,818	164,226	114,697	8,222,731	1,498,520	4,190	300	11,517	29	82	5,330	13,840	961
Third,	5,197,710	108,477	297,892	5,604,079	151,585	403	212	8,811	7	40	24,910	13,731	665
Fourth,	5,583,744	68,504	61,246	5,802,779	44,376	500	221	9,581	13	44	42,889	40,150	670
Fifth,	2,118,054	166,038	60,346	7,204,023	3,300,546	8,593	242	11,002	41	45	17,531	429,853	1,055
Sixth,	6,686,965	146,731	15,258	6,848,954	....	10	189	10,066	18	31	32,798	61,130	691
Seventh,	7,907,827	113,661	205,890	8,226,705	....	....	232	10,758	35	73	13,593	2,583	863
Eighth,	3,319,083	45,976	13,579	3,383,284	2,550	136	153	6,115	3	23	15,150	5,370	635
Ninth,	5,512,179	148,449	57,294	9,144,513	2,815,541	6,284	222	12,001	41	42	41,571	28,936	1,128
Tenth,	4,228,594	76,620	40,906	5,022,345	423,642	1,344	188	9,177	8	21	32,670	22,459	842
Eleventh,	1,476,447	139,518	85,553	8,172,143	4,360,559	8,778	245	10,755	45	53	13,790	8,783	1,165
Twelfth,	4,056,715	156,211	23,883	5,173,992	527,837	1,607	176	7,624	20	60	29,984	37,726	658
Total,	59,974,631	1,435,661	1,008,457	80,914,236	13,125,156	31,845	*216¼	117,602	301	656	314,060	693,801	10,108

*Average.

RECAPITULATION—Continued.

Districts.	Number of Boilers.					Locomotives.			Number of steam engines of all classes.	Total horse power.	Number of pumps delivering water to surface.	Capacity in gallons per minute.	Quantity in gallons delivered to surface per minute.	Number of electric dynamos.	Number of air compressors.
	Cylindrical.	Horse power.	Tubular.	Horse power.	Total horse power.	Steam.	Air.	Electric.							
First,	22	947	151	11,384	16,265	2	....	22	153	12,739	67	12,871	6,709	34	11
Second,	62	1,993	130	14,104	16,097	13	3	9	172	15,746	77	35,114	16,018	17	21
Third,	33	1,174	100	8,122	9,296	9	....	5	100	5,152	57	14,374	9,944	4	28
Fourth,	12	200	84	8,170	8,850	17	1	20	86	7,139	25	32,533	11,150	14	12
Fifth,	48	1,946	176	14,245	18,317	21	....	3	126	15,299	64	18,345	9,196	23	22
Sixth,	22	2,325	110	14,140	16,465	3	3	65	79	10,150	72	15,770	8,005	33	37
Seventh,	30	1,653	151	16,533	18,186	13	2	30	167	17,931	80	12,524	9,639	37	30
Eighth,	17	600	58	4,092	5,327	2	....	6	75	4,537	47	17,381	3,220	11	6
Ninth,	38	1,234	161	11,530	15,175	16	8	15	130	12,033	74	26,060	18,668	22	20
Tenth,	60	2,440	85	6,530	9,570	5	2	32	79	5,810	44	13,280	6,937	18	26
Eleventh,	107	3,750	119	10,021	13,633	23	3	4	136	12,173	65	39,172	23,736	17	15
Twelfth,	7	420	110	12,235	12,965	10	1	20	69	7,299	30	15,099	9,381	11	27
Total,	458	18,682	1,435	131,106	160,146	134	23	231	1,372	126,008	702	252,523	132,603	241	255

Table showing the number of each class of employes in each Bituminous district for the year 1901.

Districts.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								
	Inside foremen or mine boss.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Doorboys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	Grand total.
First,	69	70	7,218	85	715	157	679	8,993	20	153	199	6	....	99	725	1,202	10,195
Second,	73	43	7,239	....	704	199	676	8,934	46	170	191	66	1,392	97	621	2,583	11,517
Third,	103	1	6,682	133	541	106	233	7,799	20	117	131	77	130	116	421	1,012	8,811
Fourth,	66	5	7,221	135	511	169	352	8.459	28	127	105	121	....	79	662	1,122	9,581
Fifth,	64	54	5,357	247	584	80	433	6,819	56	197	206	3	3.356	120	245	4,183	11,002
Sixth,	90	8	7,346	436	638	132	473	9,123	27	120	172	28	....	96	500	943	10,066
Seventh,	71	70	7,830	123	746	143	547	9,530	26	191	206	12	....	96	697	1,228	10,758
Eighth,	103	....	4,925	84	322	78	190	5,702	23	62	60	29	....	105	134	413	6,115
Ninth,	74	58	6,904	311	690	128	461	8,626	46	167	178	18	2,518	139	309	3,375	12,001
Tenth,	98	2	6,369	159	517	186	767	8,098	19	110	117	48	350	88	347	1,079	9.177
Eleventh,	64	43	5,218	262	591	115	288	6,581	53	139	201	4	3,546	100	131	4,174	10.755
Twelfth,	61	6	5,806	211	387	100	327	6,898	13	82	128	26	....	58	419	726	7,624
Total,	936	360	78,115	2,186	6,946	1,593	5,426	95,562	377	1,635	1,894	438	11,292	1,193	5,211	22,040	117,602

Table showing causes of fatal accidents and number attributable to each cause, that occurred in and about the Bituminous coal mines, and number of widows and orphans left, by reason of such accidents, during the year 1901.

Causes of Accidents.	1st Dist.		2d Dist.		3d Dist.		4th Dist.		5th Dist.		6th Dist.		7th Dist.		8th Dist.		9th Dist.		10th Dist.		11th Dist.		12th Dist.		Total.		Percentage.	
	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.
By falls of coal,	2	....	3	....	....	...	3	....	3	....	5	....	4	....	1	....	4	....	3	....	2	....	4	...	34			
By falls of slate and roof,	31	....	12	...	4	...	8	...	17	...	5	....	22	....	....	....	28	....	2	....	13	....	11	....	153	....	64.04	....
By mine cars,	3	1	12	....	1	....	1	....	8	....	4	....	5	....	1	1	5	1	....	....	6	2	2	....	48	5		
By machinery,	....	....	....	1	....	....	....	....	....	1	1	....	1	....	....	....	....	....	....	....	....	....	....	....	2	2	17.12	77.77
By explosion of gas and dust,	....	....	....	....	....	....	....	....	7	....	....	....	....	....	....	....	1	....	....	....	20	....	....	...	28	....	9.59	....
By explosions of powder and dynamite.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	2	....	....	....
By explosions of blasts,	1	....	....	....	....	....	1	....	2	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	5	....	2.39	....
By electric shocks,	...	....	....	...	....	...	....	....	....	....	2	....	2	....	....	....	....	....	1	....	1	....	1	....	7	....	2.39	....
By falling into shafts,	....	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	.34	....
By mules,	1	....	1	....	....	....	....	....	1	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	4	....	1.37	....
From miscellaneous causes,	2	....	....	....	....	2	....	....	1	....	1	....	....	....	....	....	....	....	1	....	1	....	2	....	8	2	2.74	22.22
Total,	40	1	28	1	5	2	13	....	40	1	18	....	35	....	2	1	40	1	8	....	43	2	20	....	292	9	100	100

Number wives left widows, 184.
Children left fatherless, 412.

Table showing causes of non-fatal accidents and number attributable to each cause, that occurred in and about the Bituminous coal mines during the year 1901.

Causes of Accidents.	1st Dist.		2d Dist.		3d Dist.		4th Dist.		5th Dist.		6th Dist.		7th Dist.		8th Dist.		9th Dist.		10th Dist.		11th Dist.		12th Dist.		Total.		Percentage.	
	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.	Inside.	Outside.
By falls of coal,	20	....	9	....	8	....	8	....	7	....	5	....	8	....	4	....	6	....	3	....	3	....	21	....	102		59.37	
By falls of slate and roof,	58	....	42	....	15	....	15	....	20	....	9	....	37	....	14	....	24	....	5	....	22	....	14	....	275	....		....
By mine cars,	32	4	17	1	8	3	17	....	8	....	11	1	13	3	5	....	10	....	6	....	22	....	13	....	162	12	25.51	61.90
By machinery,	6	....	1	....	1	....	1	....	....	....	....	....	2	1	....	....	....	....	....	....	....	....	....	....	11	1	1.73	
By explosions of gas and dust,	1	....	....	....	....	....	....	....	1	....	1	....	6	....	....	....	....	....	....	....	....	....	1	....	10	....	1.57	....
By explosions of powder and dynamite,	3	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	8	....	13	....	2.02	....
By explosions of blasts,	3	....	....	....	....	....	1	....	2	....	1	....	1	....	....	....	....	....	2	....	1	....	....	....	11	....	1.73	....
By falling into shafts,	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	2	....	.31	....
By mules,	4	....	1	....	1	1	....	....	1	....	1	1	....	....	....	....	....	....	....	....	1	....	....	....	9	2	1.42	38.09
From miscellaneous causes,	9	2	10	1	2	1	....	....	6	....	.1	....	2	....	....	....	1	1	5	....	3	....	1	1	40	6	6.30	
Total,	136	6	80	2	35	5	44	....	45	....	29	2	69	4	23	....	41	1	21	....	53	....	59	1	635	21	100	100

Nationality by birth of employes who were killed or fatally injured in and about the mines of the Bituminous region during the years 1899, 1900 and 1901.

Years.	Americans.	English.	Welsh.	Scotch.	Irish.	Germans.	Slavs.	Italians.	Poles.	Hungarians.	Austrians.	Swedes.	Russians.	Belgians.	Bohemians.	French.	Finns.	Canadians.
1899,	62	14	7	10	10	16	46	26	20	16	13	5	4	4	3	2	....	....
1900,	71	16	2	8	11	10	56	29	29	13	12	7	3	2	3	3	....	....
1901,	72	20	5	5	11	13	59	32	28	13	24	4	3	....	3	5	3	1
	126						175											

I have arranged the nationalities of employes into two divisions or groups, the first comprising Americans, English, Welsh, Scotch, Irish and Germans. I include the latter, as the majority of them have had from twenty to thirty years experience in the mining of coal in this country. All the other nationalities are included in the second group.

The number in the first group in 1901 was 60,459, and in the second 57,143, making the total number employed in and about the bituminous mines 117,602.

Of the first group 126 were killed or fatally injured, while of the second group 175 persons lost their lives. The number of fatalities in the first group shows that 2,084 persons lost their lives for every 1,000 employed, while in the second group for every 1,000 employed 3,062 lost their lives.

If all the employes were of the second group, and the percentage of fatalities remained the same, 360 persons would have lost their lives instead of 301, the number of persons killed during the past year.

Had all the employes been of the first group and the percentage of fatalities remained the same, only 245 lives would have been lost.

This is a matter of speculation, as the enumeration of the employes of the various nationalities in and about the mines was never undertaken before 1900, and was continued in 1901. Thus, having the results of only two years as a guide, I am not prepared to say that my conclusions are absolutely correct, yet I am firmly of the opinion that more persons are and will be killed when men of 20 to 25 different nationalities are employed, than lose their lives in the coal mines in countries of the old world, where men of perhaps not more than 5 or 6 nationalities are employed.

Statement Showing Production of Bituminous Coal, Quantity of Explosives Used, Number of Tons of Coal Produced for Each Pound of Explosives, and Average Quantity of Coal Produced for Each Employe Inside of the Mines From 1892 to 1901 Inclusive.

Years.	Production of coal in tons.	Average number of tons produced per each employe inside	Number of pounds of black powder used.	Number of pounds of dynamite used.*	Average number of tons produced per pound of explosives used.
1892,	46,225,552	702	2,696,450	....	17.16
1893,	43,422,498	622	3,004,425	....	14.45
1894,	39,800,210	541	2,918,875	....	13.64
1895,	51,813,112	726	3,731,700	....	13.88
1896,	50,273,656	702	3,639,650	....	13.81
1897,	54,674,272	736	4,318,425	73,874	12.44
1898,	64,247,635	871	5,526,250	141,336	11.63
1899,	73,066,943	975	6,660,700	222,076	10.62
1900,	79,318,362	884	7,409,925	243,517	13.07
1901,	80,914,236	846	7,851,500	693,801	9.47

*Quantity of dynamite used was not reported until 1897.

Statement showing quantity of coal for each company that produced 700,000 tons or more, the inspection districts in the Bituminous regions in which such company's mines are located, and number of employes for each of these companies in 1900.

Names of Companies.	Number of Inspection Districts.	Production of coal in tons.	Number of employes.
Pittsburgh Coal Co.,	First, Fifth, Seventh and Ninth,	11,302,940	14,214
H. C. Frick Coal and Coke Co.,	Second, Fifth and Ninth,	10,036,793	11,478
Rochester and Pittsburgh Coal and Iron Co.,	Third and Fourth,	6,049,951	6,980
Monongahela River Consolidated Coal and Coke Co.,	First, Seventh and Ninth,	4,744,774	8,001
Berwind-White Coal Mining Co.,	Fourth, Sixth and Eighth,	4,608,981	5,847
New York and Cleveland Gas Coal Co.,	Second,	1,447,849	1,648
Westmoreland Coal Co.,	Second,	1,270,766	1,274
Washington Coal and Coke Co.,	Fifth,	1,105,922	1,044
Northwestern Mining and Exchange Co.,	Fourth,	970,298	786
Vesta Coal Co.,	First,	788,678	662
Cambria Steel Co.,	Sixth,	785,825	836
Oliver and Snyder Steel Co.,	Fifth,	715,968	744
Total,		43,828,745	53,514

The above twelve companies produced 55.25 per cent. of the total tonnage of bituminous coal, and employed 49.09 per cent. of the total number of all the employes.

Number and percentage of each class of fatal accidents that occurred in and about the Bituminous coal mines from 1892 to 1901 inclusive.

Causes of Accidents.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	Grand Total.	Percentage.
By falls of coal, slate and roof,	93	105	94	102	115	110	142	163	170	186	1,280	70.32
By mine cars,	27	14	20	28	22	20	21	37	39	48	276	14.85
By explosions of gas,	1	1	....	4	19	2	11	29	8	28	103	5.65
By explosions of powder and blasts,	2	2	3	5	1	4	5	7	9	8	46	2.53
By falling into shafts and slopes,	....	....	4	1	....	1	1	3	6	1	17	
By machinery,	....	....	....	....	1	1	....	....	1	2	5	2.14
By mules,	....	....	....	1	1	....	....	....	1	4	7	
By electric shocks,	....	....	....	....	2	2	2	5	6	7	24	1.32
By suffocation,	2	4	....	....	3	....	4	....	1	1	15	.82
From miscellaneous causes,	3	3	3	7	5	2	1	4	11	6	45	2.47
Total accidents inside,	128	129	124	148	169	142	187	248	252	290	1,820	....
By cars,	4	2	....	4	6	1	6	3	10	5	41	53.94
By machinery,	1	....	....	2	....	2	2	2	....	2	11	14.48
By suffocation,	....	....	....	....	....	1	....	....	....	....	1	
By boiler explosions,	....	....	....	....	2	3	....	1	....	....	6	9.21
From miscellaneous causes,	1	....	....	1	2	....	3	4	2	4	17	22.63
Total accidents outside,	6	2	....	7	10	7	11	10	12	11	76	....

Number of gaseous and non-gaseous mines, number of foremen, assistants and fire-bosses, production from gaseous and non-gaseous mines and percentage of production from each in the Bituminous region for 1900.

Districts.	Number of gaseous mines in each district.	Number of foremen and assistant foremen in Gaseous mines.	Number of fire bosses.	Number of non-gaseous mines in each district.	Number of foremen and assistant foremen in non-gaseous mines.	Production in tons from gaseous mines.	Production in tons from non-gaseous mines.	Percentage of production from gaseous mines.	Percentage of production from non-gaseous mines.
First,	35	53	73	25	25	7,113,928	1,540,353	82.20	17.79
Second,	41	63	68	57	41	8,743,182	4,905,017	64.06	35.93
Third,	....	....	....	80	78	....	4,923,877	....	100
Fourth,	5	5	8	70	52	2,440,923	5,758,104	29.77	70.22
Fifth,	35	40	63	63	60	6,185,084	3,775,189	62.09	37.91
Sixth,	6	13	11	121	132	1,401,676	9,292,951	13.10	86.89
Seventh,	41	41	68	24	24	5,522,245	1,411,311	79.64	20.35
Eighth,	1	1	1	114	114	115,528	4,226,648	2.66	97.33
Ninth,	27	37	37	27	27	4,824,966	2,746,788	63.72	36.27
Tenth,	....	....	....	85	89	....	4,390,572	....	100
Total and percentage,	201	253	329	666	642	36,347,532	48,970,830	45.82	54.17

Production of coal in tons in the Bituminous mines from 1892 to 1901, inclusive.

Districts.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
First,	4,299.437	4,876,307	5,282,181	5,539,951	6,697,601	6,459,200	8,909,339	9,295,646	8,654,281	8,108.658
Second,	8,033,247	6,635,908	6,424,633	9,128,787	7,364,771	9,123,797	9,820,673	12.077,460	13,648,199	8,222,731
Third,	3,207,814	3,224,130	2,641,120	3.254,947	3,243,851	3,400,302	3,761,085	4,230,092	4,923,877	5,604,079
Fourth,	3,606,142	4,850,122	4,296,596	9,294,351	5,702,765	6,541,943	7,516,944	7,246,941	8,199,027	5,802,779
Fifth,	7,360,101	3,629,559	3,908,348	6,423,802	4,979,410	6,501,545	7,754,835	8,872,514	9,960,273	7,204,023
Sixth,	7.360,158	3,140,284	2,981,088	4,406,750	4.722,873	5,501,611	7,161,333	8,594,067	10,694,627	6,848,954
Seventh,	5,897,942	4,435.416	2,438,875	4,693,508	5,624,825	5,000,375	5,943,567	6,489,157	6,933,576	8,226,705
Eighth,	6,811,735	5,043,478	3,454,078	4,709,932	3,809.412	3,798,138	3,352,840	4.476,814	4.342,176	3,383,284
Ninth,	....	4,814,178	4,690,811	5.652,813	5,210,992	5,074,385	6,625,738	7,897,490	7,571,754	9,144,543
Tenth,	....	2,772,116	1,882,530	2,708,271	2,857,096	3,261,976	3,401,281	3,886,762	4,390,572	5,022,345
Eleventh,*	....	....	....	....	....	....	....	....	....	8,172.143
Twelfth,	....	....	....	....	....	....	....	....	....	5.173,992

*Two additional bituminous districts were created in 1901.

Production of coke in tons from 1892 to 1901, inclusive.

Districts.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Second,	2,306,789	1,511,871	1,635,243	2,569,085	1,902,643	2,505,350	3,049,537	4,075,822	4,280,354	1,498,520
Third,	66,458	27,039	3,488	....	24,523	39,020	95,107	88,717	95,501	151,585
Fourth,	70,473	289,844	242,810	306,198	409,080	441,946	573,349	495,264	480,674	44,376
Fifth,	4,280,570	2,092,993	2,264,971	3,756,487	2,629,541	3,493,209	3,964,669	4,431,423	4,477,692	3,300,546
Sixth,	1,033,866	109,348	41,662	133,992	151,134	240,559	236,663	267,787	256,481	....
Seventh,	12,000	3,000	6,000	5,000	7,450	4,500	525	....	....	....
Eighth,	128,475	50,857	13,342	24,140	47,877	23,500	15,693	45,955	20,724	2,550
Ninth,	....	1,240,164	1,473,982	1,985,206	1,265,318	1,593,325	2,028,177	2,535,141	2,241,153	2,815,541
Tenth,	....	224,181	147,786	42,221	175,614	191,882	208,200	252,461	332,533	423,642
Eleventh,	....	....	....	....	....	....	....	....	....	4,360,559
Twelfth,	....	....	....	....	....	....	....	....	....	527,837

Production of Bituminous coal in tons by counties from 1892 to 1901, inclusive.

Counties.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Allegheny,	7,227,370.15	6,891,540	6,415,611	7,146,699	7,858,414	7,122,227	9,079,104	9,978,790	10,313,039	11,248,921
Armstrong,	349,561.75	300,222	577,928	649,174	566,771	570,343	843,495	1,037,396	1,290,059	1,686,075
Beaver,	188,379	151,346	135,752	267,863	236,587	183,149	205,395	264,877	273,227	169,110
Bedford,	565,760	490,416	288,753	430,804	319,575	353,489	351,091	489,781	530,648	476,985
Blair,	278,495	170,144	269,211	351,299	281,237	517,535	202,008	115,701	251,997	294,015
Bradford,	53,517	42,739	25,474	57,711	52,467	41,588	22,508	31,835	32,065	22,359
Butler,	132,040.50	160,443	134,334	220,895	223,015	227,439	161,224	203,170	251,613	325,451
Cambria,	3,289,194	3,377,459	3,005,261	4,461,629	4,899,048	5,571,721	6,564,959	7,272,644	11,589,053	8,614,492
Centre,	372,431.61	1,259,351	174,548	303,813	445,268	406,482	568,128	872,771	997,820	812,980
Clarion,	788,873.25	772,622	401,088	428,675	364,782	581,736	266,476	270,956	366,985	376,429
Clearfield,	6,631,013.18	6,081,324	4,156,310	5,442,299	4,889,793	5,392,472	4,885,780	5,860,397	2,819,109	5,232,454
Clinton,	92,242	94,582	100,000	94,692	134,568	157,388	166,226	221,090	288,881	306,228
Elk,	756,652.19	617,878	515,070	602,428	799,669	765,110	873,448	1,212,102	1,246,783	1,231,200
Fayette,	7,791,330	6,105,845	6,684,153	10,124,541	8,562,571	10,112,944	13,090,756	14,765,844	15,043,277	15,478,041
Huntingdon,	350,005	291,739	187,070	289,092	333,935	285,676	286,020	327,106	363,243	350,463
Indiana,	638,667	359,170	406,878	483,795	392,029	532,989	512,923	619,378	895,547	815,659
Jefferson,	3,682,774.38	3,072,297	3,467,481	4,528,774	4,717,363	5,309,050	6,648,980	6,412,506	6,989,656	6,034,656
Lawrence,	119,539	197,277	135,411	227,599	198,666	196,506	186,024	191,224	177,807	168,489
Lycoming,	17,000	53,192	80,160	83,830	82,730	91,735	98,118	101,924	98,064	107,095
McKean,	21,058	19,463	19,844	38,207	56,989	47,022	29,631	25,435	27,618	15,873
Mercer,	442,632.75	486,049	297,662	502,945	502,317	426,302	340,582	476,618	528,557	587,544
Somerset,	423,179	483,770	434,188	521,995	621,980	1,166,327	1,720,662	2,686,299	4,263,239	3,898,738
Sullivan,*	....	....	90,538	....	....	....	....	....	....	....
Tioga,	964,756	942,252	684,627	781,814	800,658	925,893	917,026	634,301	922,701	859,077
Washington,	2,726,941	3,414,444	3,373,778	3,410,694	4,366,518	3,761,234	4,661,180	4,779,097	4,884,828	5,602,593
Westmoreland,	8,696,964.35	7,583,346	7,739,080	10,325,245	8,566,705	10,127,965	11,475,891	14,189,423	14,872,546	16,199,709
Total,	46,576,576.11	43,421,498	38,000,260	55,813,112	50,273,656	54,674,322	64,247,635	†73,066,943	79,318,362	80,914,236

*Since 1894 in anthracite region.

†26,278 tons of coal production of small mines not under provisions of law.

Production of coke in tons by counties from 1892 to 1901, inclusive.

Counties.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Allegheny,	12,000	3,000	6,000	5,000	250	4,500	525	....	....	....
Armstrong,	....	6,556	....	....	....	....	....	....	1,000	6.000
Beaver,	....	100	80	....	....	....	....	....	....	....
Bedford,	25,876	3,000	6,016	40,420	39,200	....	39,708	51,636	101,546	67,887
Blair,	101,117	39,361	8,200	28,700	36,943	36,904	30,680	17,932	72,599	73,323
Bradford,	....	....	42,747	142,047	165,435	263,474	....	....	....	....
Cambria,	217,838	122,219	....	....	....	....	265,282	313,424	318,228	302,342
Centre,	27,600	83,203	13,069	....	....	....	....	....	....	....
Clearfield,	105,568	131,360	45,574	117,830	157,756	191,040	173,108	277,722	155,451	105,379
Elk,	17.181	29,421	8,257	....	....	....	....	293	850	....
Fayette,	4,268,825	3,011,054	3,426,791	5,339,887	3,692,397	4,851,918	5,660,209	6,421,534	6,276,854	7,023 399
Huntingdon,	1,604	29,103	....	....	....	....	....	3,750	....	....
Indiana,	40,234	33,620	5,250	7,172	22,798	16,330	15,712	48,760	68,303	2,646
Jefferson,	394,494	255,473	219,655	276.578	407,865	445,013	619,731	535,427	536,239	594,849
Somerset,	11,745	9,953	5,027	6,862	9,086	....	14,937	23,971	21,799	13,549
Tioga,	1,093	984	450	976	1,072	476	503	....	....	....
Washington,	....	....	....	....	7,200	....	....	....	....	....
Westmoreland,	2,626,455	1,700,890	1,937,128	2,956,908	2,073,291	2,723,636	3,351,525	4,548,121	4,632,243	4,935,782
Total,	7,854,630	5,459,297	5,724,244	8,922,380	6,613,253	8,533,291	10,171,920	12,192,570	12,185,112	13,125,156

Number of employes in and about the Bituminous coal mines from 1892 to 1901, inclusive.

Districts.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
First,	9,393	10.114	11,175	11,086	10,977	10,665	9,720	9.880	10,942	10,195
Second,	12,204	10,993	12,148	11,195	11,040	12,272	12,501	14,758	17,552	11.517
Third,	6,297	6,112	6,734	6,211	5,964	6,131	6,538	6,181	7,650	8,811
Fourth,	6,597	8,293	9,036	8,578	8,858	9,581	9,961	9,630	10,383	9,581
Fifth,	10,361	6,663	7,619	8,389	7,524	8,650	9,321	10,448	13,867	11.002
Sixth,	12,241	6,353	6,944	7,081	8,010	8,966	10,488	11,611	14,879	10,066
Seventh,	10,619	9,398	9,844	9,838	10.564	9,933	9,656	8,290	10,045	10,758
Eighth,	11,277	9.423	8,160	8,071	7,197	6,283	5,812	6,140	7,330	6,115
Ninth,	....	8,754	9,279	8,557	8,273	8,509	8,152	8,624	8,969	12,001
Tenth,	....	5,697	5,247	5,098	5,389	5,493	5,653	5,778	7,401	9,177
Eleventh,	....	....	....	....	....	....	....	....	....	10,755
Twelfth,	....	....	....	....	....	....	....	....	....	7,624
Total,	78,789	81,950	86.186	84,104	83,796	86,483	87,802	91,440	109,018	117,602

Number of employes in and about the mines of the Bituminous region by counties from 1892 to 1901, inclusive.

Counties.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Allegheny,	13,447	14,351	15,345	15,022	14,732	14,395	14,052	13,160	15,069	14,913
Armstrong,	740	632	1,204	1,139	1,100	971	1,527	1,436	2,105	2,483
Beaver,	467	293	455	592	608	417	441	473	451	442
Bedford,	951	967	845	863	831	803	915	978	1,112	1,200
Blair,	635	536	707	788	523	516	566	297	510	508
Bradford,	122	83	90	109	115	127	76	68	66	57
Butler,	356	328	461	489	500	590	426	341	513	659
Cambria,	5,672	6,691	7,048	7,219	8,237	8,918	9,284	9,782	17,652	14,152
Centre,	729	2,416	647	632	773	664	996	1,165	1,307	1,217
Clarion,	1,488	1,626	1,021	842	828	1,185	575	508	735	802
Clearfield,	10,639	10,933	9,733	9,416	8,989	9,016	7,947	8,072	4,127	9,202
Clinton,	173	180	151	198	211	236	206	235	254	351
Elk,	1,243	1,332	1,297	1,093	1,257	1,245	1,367	1,786	1,949	2,197
Fayette,	11,921	11,185	12,566	13,387	12,250	13.802	14,563	15,838	18,299	21,513
Huntingdon,	668	630	689	630	701	593	490	542	675	815
Indiana,	1,021	873	760	707	800	675	696	733	1,791	1,760
Jefferson,	5,974	4,234	6,342	6,166	5,972	6,039	7,278	7,029	7,705	7,353
Lawrence,	267	460	494	503	424	558	500	352	410	435
Lycoming,	60	118	166	164	166	190	193	203	200	225
McKean,	44	39	42	86	94	95	70	53	51	50
Mercer,	1,112	1,010	1,136	1,118	1,022	1,058	938	792	918	970
Somerset,	554	677	865	618	860	1,499	2,671	3,779	5,672	5,245
Sullivan,	....	....	337	....	....	....	....	....	....	....
Tioga,	2 121	2,230	2,207	2,085	1.988	2,089	2,207	1,940	2,024	2,213
Washington,	5,502	7,110	6,998	6,835	7.305	6,532	5,299	5,263	6,535	6,971
Westmoreland,	13,083	13,016	14,570	14,203	13,389	14.270	14,519	16.615	18,897	21,869

List of fatal accidents that occurred in and about the Bituminous coal mines from the year 1892 to 1901, inclusive.

Districts.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
First,	24	25	25	25	44	22	42	44	37	41
Second,	25	14	18	32	26	21	30	36	56	29
Third,	2	3	9	7	3	10	3	8	6	7
Fourth,	9	5	11	14	26	8	15	21	21	13
Fifth,	23	12	13	13	18	25	14	50	40	41
Sixth,	14	12	13	8	11	8	22	28	30	18
Seventh,	25	21	9	18	22	22	26	28	23	35
Eighth,	11	20	13	13	6	7	7	11	9	3
Ninth,	....	15	11	20	19	19	28	23	21	41
Tenth,	....	4	2	5	4	7	11	9	21	8
Eleventh,	....	....	....	....	....	....	....	....	....	45
Twelfth,	....	....	....	....	....	....	....	....	....	20
Total,	133	121	124	155	179	149	198	258	264	301

List of non-fatal accidents that occurred in and about the Bituminous coal mines from 1892 to 1901, inclusive.

Districts.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
First,	87	77	101	66	123	89	109	114	144	142
Second,	41	28	39	55	31	52	66	42	56	82
Third	26	25	12	23	17	24	22	21	53	40
Fourth,	14	22	20	32	19	32	28	33	50	44
Fifth,	71	44	47	70	48	71	62	70	56	45
Sixth,	21	15	17	19	16	20	30	33	38	31
Seventh,	56	44	47	55	49	58	66	64	72	73
Eighth,	77	31	17	34	36	29	22	29	27	23
Ninth,	....	35	40	40	41	33	26	43	37	42
Tenth,	....	25	17	25	18	18	27	38	50	21
Eleventh,	....	....	....	....	....	....	....	....	....	53
Twelfth,	....	....	....	....	....	....	....	....	....	60
Total,	393	346	357	419	398	426	458	487	583	656

Classification of employes who were killed or fatally injured in and about the Bituminous mines from 1892 to 1901, inclusive.

Years.	Inside Employes.							Outside Employes.				
	Mine foremen.	Miners.	Laborers.	Company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Blacksmiths and carpenters.	Engineers and firemen.	Company men.	Total outside.	Grand total.
1892,	1	100	9	5	11	4	130	....	3	....	3	133
1893,	1	114	7	2	6	1	131	....	....	....	....	131
1894,	....	89	5	4	12	1	111	....	1	1	2	113
1895,	3	120	5	5	20	1	154	....	1	2	3	157
1896,	1	132	23	12	16	1	185	1	3	4	8	193
1897,	3	117	10	7	7	1	145	....	2	1	3	148
1898,	....	135	20	29	11	3	198	....	1	1	2	200
1899,	2	174	12	48	15	....	251	....	4	....	4	255
1900,	4	200	9	15	20	3	251	....	3	10	13	264
1901,	6	202	7	44	29	2	290	....	....	11	11	301

Number of fatalities and causes of fatal accidents that occurred in and about the mines of the Bituminous region from 1892 to 1901 inclusive.

Years.	Inside of Mines.															Outside of Mines.						
	By Falls								By Falling Into													
	Of coal.	Slate and roof.	By mine cars.	By machinery.	By explosions of gas.	Explosions of powder and dynamite.	Explosions of blasts.	Electric shocks.	Shafts.	Slopes.	Manways and breasts.	By mules.	By suffocation.	Miscellaneous causes.	Total inside.	By cars.	By machinery.	By suffocation.	By boiler explosions.	Miscellaneous causes.	Total outside.	Grand total.
1892,	18	70	25	......	1	1	......	......	1	......	......	......	......	3	119	3	......	......	......	2	5	124
1893,	18	85	16	......	1	2	......	......	......	......	......	......	4	2	128	1	......	......	......	......	1	129
1894,	23	60	22	......	......	1	3	......	3	......	......	......	......	1	113	......	1	......	......	......	1	114
1895,	16	88	31	2	4	......	4	......	1	......	......	1	......	5	152	4	......	......	......	......	4	156
1896,	28	71	22	1	17	1	......	2	2	......	......	1	2	4	151	2	......	......	2	......	4	155
1897,	21	92	20	1	2	1	3	2	1	......	......	......	1	......	144	1	......	1	3	1	6	150
1898,	26	105	35	......	11	1	4	3	1	......	......	......	4	......	190	5	4	......	......	1	10	200
1899,	26	137	40	......	29	4	4	5	3	......	......	......	......	3	251	1	3	......	2	1	7	258
1900,	38	129	49	1	6	8	1	6	10	......	......	......	2	10	260	4	......	......	......	1	5	265
1901,	34	152	48	2	28	2	6	7	1	......	......	4	......	6	290	5	2	......	......	4	11	301

Fatal Accidents per Each 1,000 Employes in and About the Bituminous Coal Mines, and Tons of Coal Mined for Each Fatal Accident From 1884 to 1901, Inclusive.

Years.	Employes.	Fatal accidents.	Fatal accidents per 1,000 employes.	Number of tons of coal mined.	Number of tons mined for each fatal accident.
1884,	39,994	105	2.625	20,553,090	195,743
1885,	44,145	72	1.630	24 030,919	333,763
1886,	51,846	81	1.562	28,607,173	353,175
1887,	57,774	103	1.783	33,902,030	329,146
1888,	61,564	89	1.445	33,832,285	380,138
1889,	55,600	105	1 888	34 625,449	329,766
1890,	66,851	146	2.183	40,740,521	279,045
1891,	74,166	236	3.182	41,831,456	177,252
1892,	78,784	133	1,688	46.225,552	347,560
1893,	79,834	131	1.640	43,422,498	331,4 9
1894,	86,177	124	1.441	39,800,210	324,194
1895,	84,904	155	1.825	51,813,112	334,278
1896,	83,796	179	2.136	50,273,656	280,858
1897,	86,483	149	1.723	54,674,272	366,941
1898,	87,8 2	198	2.2 5	64 247,635	323,483
1899,	91,440	258	2 821	72,866,943	282,429
1900,	109,018	265	2.430	79,318,362	311 311
1901,	117,602	301	2.559	80,914,236	2 8,8 8

A BOON TO MINING INTERESTS.

In the interest of employes in gaseous mines who use explosives to bring down the coal and whose lives are endangered by explosions of gas, also in the interest of operators whose mines are dry and gaseous, and who naturally are in constant dread of explosions and mine fires resulting from them, I publish the following statement of an improved cartridge, the use of which I feel assured will do much to avert the danger from such explosions and fires:

From what I have heard of the efficiency of the Safety Blasting Cartridge, I deem it a boon to those engaged in the mining of coal, and think it my duty to call the attention of those in charge of mines to its advantages. I hope that its adoption will be the means of decreasing the loss of life and destruction of property from explosions of gas, and mine fires.

While I have not personally witnessed any tests of this new device, I append some testimonials from men who are experts on the subject and whom I know to be truthful and disinterested.

Description.

This cartridge is composed of an inner and an outer tube made of specially prepared material with the intervening space between the inner and outer tube filled with water; it is made in a number of sizes to meet the various requirements to produce the desired results.

The method of its preparation is simple and easy, rendering it feasible to place in the hands of anyone for use. The explosive is placed in the small or inner tube, with the firing wires adjusted to protrude, and the tube is firmly corked; this loaded tube is then placed in the larger tube and the entire surrounding space is filled with water. The firing wires are carried through the cork inserted in the outer tube which is firmly driven home, and the cartirdge is then ready for the shot hole. This cartridge is adapted for use with either firing wires, fuse or squibs.

The efficiency of the cartridge in action is perfect, there being no flame, flash or spark.

At the moment of explosion every vestige of fire is instantly destroyed and the danger from secondary explosions, whether in gaseous or dry mines is entirely eliminated, regardless of how hazardous the conditions may be.

In consequence of the water acting as a cushion or "tamp," much of the dangerous tamping is unnecessary, and as a greater lateral force is exerted by the same given quantity of explosive, the output of each blast is fully twenty per cent. more than is produced by the present method, and in addition there is no excessive shattering.

The cartridge prevents the miner from using more of the explosive than he is allowed, thus preventing injury to the walls and roof of the mine by overcharging in blasting.

We claim for this cartridge and can substantiate such claim from actual practice, that there is no danger of loss of life or injury to the miner, and the property of the mine owner is thoroughly protected from loss or damage.

The following endorsements from mine Inspectors, managers and mine foremen may be interesting, as they recommend its perfection of action under the most trying conditions and advise its use for reasons both of safety and economy:

"Connellsville, Fayette Co., Pa.,
August 22, 1901.

"National Safety Cartridge Co.,
"Betz Building, Philadelphia:

"Gentlemen: I had the pleasure of testing on the 17th and 18th inst. six flameless cartridges at the Continental No. 1 Mine in this county. The mine is 321 feet deep and is a gaseous one. I had the best possible opportunity of seeing if there would be any flame when the blast exploded and I had also three of my best men with me.

"We stood about 200 feet in a straight line from the locality of the blasts and looking directly at them, and none of us detected any flame. Having had 34 years experience in mines and in handling explosives, I can truthfully say that these cartridges are a godsend to the men who are toiling under ground, as their greatest dread is explosions, and I cannot too highly recommend their use in all mines where blasting is done.

"Respectfully,
"ALFRED C. JONES, Mine Foreman."

"The Thomas Coal Company,
Kehley's Run Colliery,
Shenandoah, Pa.

"National Safety Cartridge Co.,
"Betz Building, Philadelphia:

"Dear Sirs: After making a thorough test of your patent Flameless Cartridge I can cheerfully recommend it as doing all you claim for it. It is an excellent thing for gaseous mines to prevent explosions, and mine fires in very dry mines, and is the best device that has ever come under my notice.

(Signed) "THOMAS BAIRD, Superintendent,
"The Thomas Coal Co."

"Second Bituminous Inspection District,
"C. B. Ross, Inspector,
"Greensburg, Pa., Nov. 15, 1901.

"National Safety Cartridge Co.,
"Betz Building, Philadelphia:

"Gentlemen: On the above date at the No. 2 Mine of the Penn Gas Coal Company located near Irwin, Pa., a test was made with your safety cartridge.

"In making the test, dynamite was used in the cartridge and when the blasts exploded neither flame nor spark could be seen. The gas which was being given off very freely at the face, was not ignited by the blasts, which proved conclusively that the test was a complete success.

"In my opinion, the use of the cartridge in combination with dynamite as an explosive, for bringing down coal in mines where blasting is necessary, will not only do the work successfully, but it will reduce the liability of danger from mine fires which so frequently occur from blasting in the ordinary way, to a minimum.

"Respectfully yours,
(Signed) "C. B. ROSS,
"Mine Inspector."

"Fifth Bituminous Inspection District,
"Uniontown, Fayette Co., Pa.,
"November 20, 1901.

"National Safety Cartridge Company:

"Gentlemen: I fully tested the Safety Cartridges which you left with me and I fully concur with Mr. C. B. Ross, Inspector, in his opinion and endorsement of the cartridge, as, if it is put into general use, it will do much to prevent the loss of life and destruction of property from fires which now occur from 'blown out shots' and ignition of gas, which have entailed great loss upon the owners of mines.

"Yours, &c.,
(Signed) "ISAAC G. ROBY,
"Inspector Fifth Bituminous District."

"Lincoln Mines,
"Fayette Co., Pa., No. 22.

"National Safety Cartridge Co.,
"Betz Building, Philadelphia:

"Gentlemen: I was much pleased with the results of the test made by you to-day in the Lincoln Mines, owned by Messrs. A. L. Kiester & Co., of your water cartridge. Absolutely no flame was caused by the explosion of dynamite in the water cartridge used, and very little smoke.

"I am of the opinion that the use of your cartridge will be conducive to the health and safety of those engaged in mining operations.

"Yours very truly,
(Signed) "CHAS. CONNOR,
"Ex-Mine Inspector."

"Oliver, Fayette Co., Pa.,
"December 23, 1901.

"National Safety Cartridge Co.,
"Betz Building, Philadelphia:

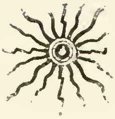
"Gentlemen: I was present at the firing of your Patent Water Cartridge in our Oliver No. 1 Mine on December 21st. I saw no sign of flame either at time of explosion or after.

"I think the cartridge will be a valuable addition to the present system of firing, and would think that it would be the means of preventing many disastrous accidents.

"We shall certainly adopt it in all gaseous places.

"Yours very truly,
(Signed) "FRED. C. KEIGHLEY,
"General Superintendent."

ANTHRACITE MINE DISTRICTS.



First Anthracite District.

(LACKAWANNA, SUSQUEHANNA AND WAYNE COUNTIES.)

Scranton, Pa., March 5, 1902.

Hon. James W. Latta, Secretary of Internal Affairs, Harrisburg, Pa.:

Sir: I have the honor of herewith transmitting my report as Inspector of Mines for the First Anthracite District for the year ending December 31, 1901.

The total production of coal was 7,728,344 tons, an increase of 1,359,396 tons over that produced during the preceding year. The average number of days worked was 198.7 against 161.5 in 1900.

There were 18,733 persons employed which is an increase of 1,448 over those of the year 1900.

To produce this quantity of coal 262,080 kegs of powder and 204,959 pounds of dynamite were used. The number of fatal accidents was 58, eighteen more than occurred the previous year, and the number of non-fatal ones was the same. The number of wives made widows was 29, and 52 children under fourteen years of age were left fatherless. The number of tons produced per life lost was 133,247 and 43,911 tons produced per accident.

There were but two accidents whereby more than one person was killed at one time, two happened in the same mine. In one case two men were killed by a large bell-shaped rock falling on them while they were on their way back to the face of their chamber after a blast. In the other a car jumped the track coming down a grade and dislodged several props, and while replacing these, after an examination of the roof had been made by the assistant mine foreman, it fell, and killed the four men engaged, including the assistant foreman, who was a very careful, competent and trustworthy man, but in this case his judgment erred.

To falls of rock and coal and mine cars are attributed 44, or 75.86 per cent. of the fatal accidents, thirty-three to the former and eleven to the latter, thus showing that as in former years these are the most prolific causes of fatalities. With the exception of the six deaths already noted, the other twenty-seven occurred close to the "working faces," and in many cases shortly after the men had resumed operations, after an unsuccessful effort to pry down what appeared to them to be a bad looking piece of roof or coal.

After considerable effort to pull down these pieces, and failing to accomplish their object at the time, they finally before "going up," are convinced that "it is not as bad as they first thought it was," and with this confidence, again resume their work, not always, however, without placing a prop or two under it "for fear it will come."

This, while a good practice, is not always a sure one, as I have frequently found upon investigation, evidence similar to this. "We had a drill, and sometimes it is two drills, over that slab, but it would not come, or we could not pull it, so we then decided to put up a prop or two under the thick part of it, but we did not see that seam." In these cases it is not always convenient or advisable to double timber the roof, and propping is the next easiest thing to do, and is frequently resorted to in preference to the more difficult though infinitely safer precaution of blasting down the "suspicious places." Hence, to avoid a great number of accidents from falls of this kind, I would earnestly urge upon all miners not to work under a piece of roof if once their judgment has led them to think it unsafe, and which they have failed with one or even two drills to pry down, and recommend that it be blasted down, as the only safe and reliable measure to adopt. I am convinced by close observation, that if the miners would at all times be governed by this suggestion, and never allow any false sense of security to lead them to cease their efforts until the "suspicious piece" is down, it would go a long way toward reducing the number of fatalities each year.

The reckless indifference to danger on the part of the drivers in jumping on and off cars, and the most dangerous of all their practices, that of sitting on the bumper of swiftly moving cars, and at the same time sliding their feet along the rail is characteristic of nearly all drivers, and they do not realize the great danger attending it. It is a practice that each year since the long bumpers on mine cars came into use, has destroyed the lives of several young boys, and I urgently recommend that each mine foreman take a more active interest in the welfare of the driver boys, and adopt stringent rules to prevent this, and instruct their assistants, especially the driver bosses, to strictly enforce them, which I am sure will have a wholesome effect.

The remaining fourteen deaths are due to ten different causes, as will be seen by consulting table giving causes of accidents.

The condition of the mines on the whole is satisfactory. In many of them the whole output is obtained from pillars which are being "robbed," previous to abandonment. The work is dangerous, and much more so in some mines than in others, but in every case suitable recommendations have been made to secure the greatest degree of safety. While "cogging" for the purpose of trying to prevent a "squeeze," which is caused by the removal of pillars, from "spreading" in the Glenwood shaft, in May last, a larger and more sudden "fall" occurred than was expected, and the men who had retreated a considerable distance out of the gangway, but not far enough, were blown with great violence along the gangway by the wind caused by the cave, one with such force against the "rib" as to fracture his skull and cause his death. Aside from this there were no other fatalities due to falls brought on by "robbing."

Several of the mines in this district were flooded last spring, and one of them, the Glenwood, did not resume operations for seven months. To prevent, if possible, any recurrence of the damage by flood, several large new pumps have been installed by the Delaware and Hudson, and Hillside Coal and Iron Companies.

The law requiring medical rooms has been generally complied with, and in many cases large, convenient and comfortable brick or stone rooms have been provided, which are supplied with all that the law requires.

Together with the enforcement of this law, a suggestion was made to several of the superintendents to further add to the comfort of those who might be unfortunate enough to be injured, by adopting some suitable means of comfortably heating the ambulances in winter, to which many of the superintendents cheerfully complied.

Following is a copy of a letter sent to every superintendent in the district with reference to the above:

"Scranton, Dec. 16, 1901.

"Mr. ——————————,

Superintendent:

"Dear Sir: Since a law requiring a medical room in all mines is in force, I desire to further submit for your consideration a suggestion along the same line, with a view of adding to the comfort of injured persons who may have to be conveyed either to their homes or hospitals in ambulances in the winter.

"It is that you provide some suitable heating apparatus that will keep the ambulance at a comfortable temperature while the person is being conveyed to his destination.

"The suggestion has been made to all those in charge of mines in this district, and all look upon it with favor, and trusting you will do the same.

"Respectfully yours, etc."

The report contains the usual tables descriptive of all fatal accidents. Tables of statistics. Also a table showing from the monthly reports of the mine foremen the volume of air in circulation; also the names of the successful applicants for mine foremen and assistant mine foremen.

All of which is most respectfully submitted.

EDWARD RODERICK,
Inspector.

TABLE A—Total Production in Tons During the Lear 1901.

Delaware and Hudson Company,	2,926,366
Temple Iron Company,	915,857
Scranton Coal Cmpany,	962,375
Hillside Coal and Iron Company,	944,747
Pennsylvania Coal Company,	333,345
Delaware, Lackawanna and Western Railroad Company,	609,309
Price Pancoast Coal Company,	338,653
Dolph Coal Company,	208,692
Riverside Coal Company,	135,355
Moosic Mountain Coal Company,	115,048
Mt. Jessup Coal Company,	92,779
Carney & Brown Coal Company,	75,335
Clark Tunnel Coal Company,	35,881
Black Diamond Coal Company,	29,563
W. L. Barton Coal Company,	5,039
Total,	7,728,344

Total production was made up as follows:

Shipments by railroad to market,	7,107,980
Sold at mines for local use,	100,466
Consumed to generate steam,	519,898
Total,	7,728,344

TABLE B—Number of Fatal Accidents and Tons of Coal Produced per Accident.

Names of Companies.	Number of fatal accidents.	Number of tons produced per accident.
Delaware and Hudson Company,	19	154,019
Temple Iron Company,	9	101,762
Scranton Cotl Company,	7	137,482
Hillside Coal and Iron Company,	2	472,373
Pennsylvania Coal Company,	3	111,115
Delaware, Lackawanna and Western Railroad Company,	4	152,325
Price, Pancoast Coal Company,	5	67,730
Dolph Coal Company,	2	104,346
Riverside Coal Company,	2	67,677
Moosic Mountain Coal Company,	1	115,048
Mt. Jessup Coal Company,	2	46,389
Black Diamond Coal Company,	1	29,563
Clark Tunnel Coal Company,	1	35,881
Total and averages,	58	133,247

TABLE C—Number of Fatal and Non-Fatal Accidents and Tons of Coal produced per Accident.

Names of Companies.	Number of accidents.	Tons produced per accident.
Delaware and Hudson Company,	58	50,455
Temple Iron Company,	17	53,874
Scranton Coal Company,	23	41,408
Hillside Coal and Iron Company,	9	104,972
Pennsylvania Coal Company,	10	33.334
Delaware, Lackawanna and Western Railroad Company,	20	30,465
Price, Pancoast Coal Company,	21	16,126
Dolph Coal Company,	5	41.738
Riverside Coal Company,	4	33,839
Moosic Mountain Coal Company,	1	115,048
Mt. Jessup Coal Company,	5	18,556
Black Diamond Coal Company,	1	35,881
Clark Tunnel Coal Company,	2	14,781
Totals and averages,	176	43,911

TABLE D.—Showing Occupations of Persons Killed or Injured.

Occupation.	Killed or fatally injured.	Injured.	Total.
Miners,	21	44	65
Laborers,	22	23	45
Culm Dumper,	1		1
Drivers,	5	18	23
Headmen,		2	2
Brakemen,		2	2
Slate pickers,	1	4	5
Timbermen,	1		1
Bratticemen,		2	2
Door boys,		4	4
Runners,	3	7	10
Sinkers,		6	6
Driver boss,		1	1
Loader (outside),	1		1
Assistant mine foreman,	1		1
Fire boss,		1	1
Motor boy,		1	1
Foot men,	1	1	2
Crusher boy,	1		1
Oilers,		1	1
Engineers,		1	1
Totals,	58	118	176

TABLE E.—Classification of Accidents.

Causes of Accidents.	Killed or fatally injured.	Injured.	Total.
By falls of rock,	26	26	52
By explosions of blasts,	4	10	14
By cars (inside),	10	32	42
By concussion caused by cave,	1	....	1
By falls of coal,	7	10	17
By falling from trestle,	1	1	2
By cars (outside),	1	7	8
By falling down shaft,	1	....	1
By falling timber,	1	4	5
By machinery,	1	3	4
By explosions of dynamite,	2	....	2
By explosions of gas,	1	18	19
By falling ice,	1	....	1
By smothering in culm chute,	1	....	1
By miscellaneous causes,	....	7	7
Totals,	58	118	176

TABLE F.—Nationalities of Persons Killed and Injured.

Nationalities.	Killed.	Injured.	Totals.
American,	17	32	49
Poles,	9	22	31
Irish,	7	22	29
Slavs,	5	9	14
Italian,	8	4	12
English,	5	6	11
Hungarian,	2	8	10
Welsh,	3	7	10
Russian,	2	1	3
German,	....	3	3
Austrian,	....	4	4
Totals,	58	118	176

Table showing method of ventilating and quality of air in cubic feet per minute circulating in each mine.

Name of Mine.	Name of Operator.	Number of fans.	Diameter of fans.	Number of splits.	Number of persons employed in each split.	Number of Cubic Feet of Air Per Minute At			Average number of cubic feet of air per minute per person employed.
						Inlet.	Face of gangway.	Outlet.	
Legitts Creek,	Delaware and Hudson Co.,	3	20	1	46	33,000	30,240	35,600	717
				2	34	28,800	24 340	29,960	844
				3	2	30,600	old works	32,600	15,300
				4	24	36,320	37,500	38,700	1,612
				5	3	104,500	old works	110,480	34,833
				6	none	22,740	old works	27,000	
				7	none	19,800	old works	25,400	
				8	56	77,220	78,840	85,050	1,378
				9	52	39,155	39,600	40,500	753
				10	16	19,200	20,000	21,560	1,200
				11	56	110,300	85,000	113,200	1 960
				12	72	109,300	86,000	112,000	1.518
Marvine,	Delaware and Hudson Co.,	2	20	1	50	39,420	31,600	41,000	788
				2	51	61,200	56,700	63,850	1.200
				3	50	60,550	57,200	67,800	1.231
				4	55	32,300	22,000	36,000	587
				5	52	54,000	39,100	55,100	1,040
				6	16	25,100	22,100	26,000	1,768
				7	50	19,340	16,745	24,270	386
				8	48	40,275	34,960	43,820	839
				9	12	25,400	20,325	30,275	2.146
				10	18	45,275	43,445	50,400	2,515
				11	40	60,120	58,200	64,275	1,513
				12	50	61,300	56,225	65,870	1,226
				13	50	62,575	58,000	67,100	1,251

Table showing method of ventilating and quantity of air in cubic feet per minute circulating in each mine—Continued.

Name of Mine.	Name of Operator.	Number of fans.	Diameter of fans.	Number of splits.	Number of persons employed in each split.	Number of Cubic Feet of Air Per Minute At			Average number of cubic feet of air per minute per person employed.
						Inlet.	Face of gangway.	Outlet.	
Eddy Creek,	Delaware and Hudson Co.,	3	22	1	56	18,400	16,200	19,800	328
		....	20	2	46	20,000	18,000	21,300	434
		....	....	3	28	12,180	10,800	14,025	433
		....	10	4	3	8,400	8,000	9,400	2,800
		....	....	5	18	21,960	18,000	25,560	1,220
Olyphant,	Delaware and Hudson Co.,	1	22	1	26	14,760	13,550	15,925	567
		....	....	2	32	15,265	14,400	16,200	477
		....	....	3	60	22,320	18,750	25,200	372
		....	....	4	44	21,600	18,600	24,150	490
		....	....	5	54	20,900	17,875	23,870	401
		....	....	6	42	18,630	15,975	19,680	443
		....	....	7	17	15,750	14,400	16,380	926
		....	....	8	38	15,265	14,400	16,200	401
Grassy Island,	Delaware and Hudson Co.,	2	20	1	50	26,700	19,910	29,200	534
		....	....	2	60	28,860	21,340	30,270	481
		....	....	3	25	17,000	15,175	17,900	680
		....	....	4	20	30,000	27,860	30,265	1,500
		....	....	5	20	11,620	11,000	12,000	581
		....	....	6	15	11,000	10,300	12,120	733
		....	....	7	70	19,875	16,460	21,000	284
		....	....	8	50	14,000	12,700	16,360	280
		....	....	9	20	12,780	11,300	15,000	639
		....	....	10	30	21,000	18,720	21,800	700
White Oak,	Delaware and Hudson Co.,	Natural,	....	1	33	29,250	14,000	32,500	886

Jermyn,	Delaware and Hudson Co.,	1	20	1	75	42,100	19,500	43,500	561
				2	75	35,500	15,600	37,100	473
				3	74	28,200	14,500	30,100	381
				4	67	19,000	11,500	20,100	283
				5	70	20,100	12,200	20;100	287
Powderly,	Delaware and Hudson Co.,	1	17	1	35	12,500	10,935	14,400	357
				2	68	13,200	11,184	14,040	193
				3	29	11,340	10,800	11,880	391
				4	42	12,780	11,800	14,280	304
				5	66	18,810	14,364	19,140	285
				6	29	10.935	9,405	14,400	376
				7	18	11,184	10,320	14,040	621
No. 1,	Delaware and Hudson Co.,	Natural,		1	30	13.000	12,000	15,000	433
				2	28	12,000	11,000	13,000	428
				3	35	10,000	9,000	11,000	285
				4	12	9.000	8,000	10,000	750
				5	25	22,000	21.000	23,000	880
				6	18	9,000	8,000	10,000	500
				7	60	20,000	19,500	22.500	333
				8	17	14,000	13,500	16,000	823
Coal Brook,	Delaware and Hudson Co.,	2	14	1	32	8.200	7,500	9,460	256
			20	2	62	22,500	19,140	24,750	362
				3	52	13,600	11,860	15,190	261
				4	55	13,600	12,100	14,400	247
				5	38	11,750	11,230	12.210	309
				6	32	6,850	6,460	8,220	214
				7	24	12,510	12,030	13,210	521
				8	66	14,260	13,850	14,800	216
				9	50	13,130	12,670	13,590	262
				10	66	21,960	19.850	24,000	332
Clinton,	Delaware and Hudson Co.,	2	14	1	73	22,598	21,540	22,702	309
				2	74	22,060	21,730	22,300	298
				3	75	22.800	22,326	23,468	304
				4	61	19,662	19.274	19,896	322
				5	74	26.042	25,468	26,300	351
				6	60	18,208	17,148	18,606	303
				7	32	10,872	10,246	11,148	339
Lackawanna,	Temple Iron Co.,	2		1	40	25,690	22.385	26,250	642
				2	75	28.785	25,380	28,975	383
				3	75	21,875	19.575	22,350	291
				4	63	21,890	18.560	23,860	347
				5	28	24,710	22,440	27.000	882
				6	35	27,090	24.910	28.500	774

Table showing method of ventilating and quantity of air in cubic feet per minute circulating in each mine—Continued.

Name of Mine.	Name of Operator.	Number of fans.	Diameter of fans.	Number of splits.	Number of persons employed in each split.	Number of Cubic Feet of Air Per Minute At			Average number of cubic feet of air per minute per person employed.
						Inlet.	Face of gangway.	Outlet.	
Sterrick Creek,	Temple Iron Co.,	2	20	1	75	22,190	14,320	23,760	295
				2	70	18,760	12,230	19,260	268
				3	20	6,100	5,260	7,2[illegible]0	305
				4	56	18,350	10,400	19,625	327
				5	71	26,245	17,995	27,290	354
				6	56	18,360	10,410	19,635	327
Edgerton,	Temple Iron Co.,	Natural		1	9	24,300	20,100	28,130	2,700
				2	5	21,100	18,300	24,700	4,220
North West,	Temple Iron Co.,	1	14	1	64	34,375	33,120	34,360	537
				2	65	31,540	21,735	34,535	531
				3	62	36,715	35,760	36,725	592
				4	47	24,435	22,160	24,420	519
				5	40	19,270	19,255	19,285	481
Richmond No. 4,	Scranton Coal Co.,	1	20	3		*			
Johnsons No. 1,	Scranton Coal Co.,	1	35	1	60	25,300	19,000	26,000	421
				2	55	23,700	18,600	23,900	430
				3		6,600	old works	6,600	
				4		6,500	old works	6,500	
				5		13,000	old works	13,000	
				6		11,000	old works	11,000	
				7		10,000	old works	10,000	

		....	....	8	65	48,500	36,000	48,000	746
		....	....	9	75	31,200	....	31,650	415
Johnsons No. 2, ...	Scranton Coal Co., ...	....	....	3	70	20,400	14,625	25,600	291
		....	....	4	60	14,500	9,575	17,225	241
Ontario, ...	Scranton Coal Co., ...	1	18	1	64	14,500	10,000	29,500	226
		....	....	2	50	12,375	9,700		247
		1	20	1	57	15,900	11,800	16,200	278
		1	15	2	46	11,900	8,100	12,600	258
		1	12	3	65	14,600	9,150	15,100	224
		....	....	4	39	13,850	8,200	12,600	355
		....	....	5	28	10,550	7,200	9,700	376
		....	....	6	58	19,050	6,700	20,200	328
		....	....	7	45	23,000	16,300	24,600	511
Raymond, ...	Scranton Coal Co., ...	1	18	1	74	13,100	10,330	15,400	177
		....	....	2	73	13,200	10,150	15,300	180
		....	....	3	40	15,725	13,440	18,710	393
		....	....	4	75	18,500	13,620	19,900	246
		....	....	5	70	16,000	12,475	18,740	228
Richmond No. 3, ...	Scranton Coal Co., ...	1	24	1	46	42,180	37,380	46,580	916
		....	....	2	74	27,440	24,220	31,870	370
Clifford, ...	Hillside Coal and Iron Co., ...	1	18	1	73	22,750	13,230	21,750	311
		....	....	2	71	20,270	11,190	18,640	285
		....	....	3	60	35,220	9,760	16,560	533
Forest City Slope, ...	Hillside Coal and Iron Co., ...	1	14	1	52	13,150	11,200	14,600	253
		....	....	2	67	19,320	16,265	21,629	288
		....	....	3	20	8,330	6,370	10,250	416
		....	....	4	44	12,825	10,350	13,205	291
		....	....	5	36	15,350	....	17,570	426
Forest City No. 2, ...	Hillside Coal and Iron Co., ...	1	25	1	73	16,841	15,725	17,850	230
		....	....	2	74	16,980	15,110	17,675	229
		....	....	3	72	15,730	15,873	16,853	218
		....	....	4	72	14,665	14,410	15,000	203
		....	....	5	72	14,972	14,413	15,136	208
		....	....	6	71	15,630	14,720	16,886	220
Erie, ...	Hillside Coal and Iron Co., ...	1	12	1	50	11,723	11,742	11,736	234
		....	....	2	70	14,520	14,531	14,560	207
		....	....	3	75	16,589	16,576	16,587	221

Table showing method of ventilating and quantity of air in cubic feet per minute circulating in each mine—Continued.

Name of Mine.	Name of Operator.	Number of fans.	Diameter of fans.	Number of splits.	Number of persons employed in each split.	Number of Cubic Feet of Air Per Minute At			Average number of cubic feet of air per minute per person employed.
						Inlet.	Face of gangway.	Outlet.	
				4	68	14.540	14,537	14,541	213
				5	50	11,400	11,434	11,442	228
Keystone,	Hillside Coal and Iron Co.,	Natural	entilat'n	1	58	59,650	58,560	44,000	1,027
				2	28	28,430	27,640	20,000	1.015
Glenwood,	Hillside Coal and Iron Co.,	1		1	60	†20,140	19,830	20,260	335
				2	60	19,830	19,140	19,910	330
				3	60	21,210	20,720	21,330	353
				4	60	21,140	20,830	21,260	352
No. 1 Shaft,	Pennsylvania Coal Co.,	1	18	1	60	15,400	12,900	15,750	256
				2	22	14,450	12,100	14,300	656
				3	9	9,000	6,750	9,400	1,000
				4	14	15,600	12.700	16,000	1,114
				5	42	20,450	14,000	20,000	486
				6	45	26,340	14,000	26,350	585
No. 2 Shaft,	Pennsylvania Coal Co.,	1	18	1	69	16,335	14,335	27,925	236
				2	8	9,540	8,390	27,925	1,192
				3	51	18,560	16,460	33,250	364
				4	31	12,600	10,970	33,250	406
Gipsy Grove,	Pennsylvania Coal Co.,	1	18	1	24	8,000	7,600	8,000	333
				2	37	14,000	12,500	14,000	378
				3	40	10,000	9,500	10,000	250
				4	50	13,000	12,400	13,000	260

		....	....	5	15	4,000	4,000	4,000	266
		....	....	6	50	13,000	12,500	13,000	260
		....	....	7	20	8,000	8,000	8,000	400
Storrs No. 1, ...	Del., Lack. and Western Railroad Co., ..	1	16	1	41	12,974	10,656	15,080	316
		....	....	2	52	18,059	17,454	19,780	347
		....	....	3	40	74,562	12,424	75,191	1,864
		....	....	4	48	39,391	14,910	32,567	820
		....	....	5	57	‡	12,840	13,763	§225
		....	....	6	19	....	9,518	11,313	500
		....	....	7	72	....	23,664	‖	328
Storrs No. 2, ...	Del., Lack. and Western Railroad Co., ..	1	16	1	24	**180,224	13,376	††82,364	556
		....	....	2	31	95,345	16,283	114,271	525
		....	....	3	54	....	24,578	34,240	455
		....	....	4	33	....	19,742	25,643	598
		....	....	5	36	....	25,203	....	700
		....	....	6	59	....	16,720	....	283
		....	....	7	30	....	11,922	....	397
		....	....	8	24	....	22,132	....	922
Storrs No. 3, ...	Del., Lack. and Western Railroad Co., ..	1	16	1	58	**115,300	23,200	147,700	400
		....	....	2	62	....	17,300	††	279
		....	....	3	62	....	15,000	....	242
		....	....	4	37	26,300	13,400	46,350	362
		....	....	5	25	....	20,700	....	828
		....	....	6	14	....	8,000	....	571
		....	....	7	16	47,400	13,900	72,000	868
Pancoast, ...	Price, Pancoast Coal Co., ...	1	35	1	69	19,070	16,000	20,000	276
		....	....	2	60	16,979	15,578	17,284	283
		....	....	3	55	12,421	10,380	13,026	225
		....	....	4	60	17,820	14,106	17,964	297
		....	....	5	57	12,294	10,070	13,296	215
		....	....	6	57	15,100	9,080	15,360	264
		....	....	7	68	21,770	19,348	23,426	320
		....	....	8	48	19,656	18,000	21,610	409
		....	....	9	20	11,400	9,534	11,812	570
Dolph, ...	Dolph Coal Co., ...	2	16	1	52	64,940	....	68,550	1,248
		....	....	2	68	35,700	16,000	36,420	525
		....	....	3	42	28,350	13,860	29,730	675
		....	....	4	60	14,000	12,810	14,150	233
		....	....	5	15	8,420	7,920	8,540	561
		....	....	6	39	10,234	9,244	10,260	262
		....	....	7	33	14,231	14,000	14,250	431
		....	....	8	10	8,450	7,927	8,580	845

Table showing method of ventilating and quantity of air in cubic feet per minute circulating in each mine—Continued.

Name of Mine.	Name of Operator.	Number of fans.	Diameter of fans.	Number of splits.	Number of persons employed in each split.	Number of Cubic Feet of Air Per Minute At			Average number of cubic feet of air per minute per person employed.
						Inlet.	Face of gangway.	Outlet.	
Riverside,	Riverside Coal Co.,	1	22	1	68	18,220	15,235	18,280	267
		....	....	2	44	14,320	13,645	14,540	325
		....	....	3	67	18,255	15,340	17,630	272
Moosic Mountain,	Moosic Mountain Coal Co.,	1	16	1	50	15,230	10,020	19,540	304
		....	....	2	55	16,450	12,600	22,260	299
		....	....	3	38	13,540	11,980	17,560	356
Mt. Jessup,	Mt. Jessup Coal Co.,	1	16	1	44	25,100	8,945	26,150	570
Murray,	Carney & Brown,	Natural,	....	1	28	13,828	9,894	13,128	493
		....	....	2	39	15,642	12,124	15,264	401
Black Diamond,	Black Diamond,	Natural,	‡‡	....	....	....	....	....	....
Bartons,	L. W. L. Barton,	§§	....	....	....	....	....	....	....

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*No report; robbing pillars previous to abandonment and opening up new vein.
†These are the measurements of the last week in May; mine drowned for the balance of the year.
‡Inlet from No. 2 shaft fan.
§Averaged by quantity as reported at face of gangway.
||Outlet to No. 2 shaft fan.
**Main inlets.
††Main outlets.
‡‡Robbing pillars and re-opening old works; no reports received as yet.
§§Natural ventilation; re-opening old works; ventilation through caves to surface.

Names of Successful Applicants for Mine Foreman Certificates of Qualification at the Annual Examination Held in Carbondale on the 14th, 15th and 16th of August, 1901:

John L. Davis, Alban Evans and David T. Lewis, Olyphant; Peter Flannely, P. F. Fox and Thomas Johns, Vandling; A. S. Mason and Peter Kelly, Jermyn; Louis J. Robertson and Lewis H. John, Scranton; David T. Powell, Mayfield; Fred. W. Seymour, Wilkes-Barre; David D. Williams, Plymouth; Frank H. Rees and John Elvidge, Peckville; John Price and G. J. Thomas, Carbondale; David Girvan, Dunmore, and George V. O'Harra, Priceburg.

Those who passed for assistants certificates at the same examinations were:

Frank A. Gleason, James Mulderig and A. R. Hamfeltt, Dickson; John L. Williams, Thomas Muldowney, Richard Walsh, Francis Farrell, Hector Davis, William Pugh, John M. Jehu, William Morgan and Thomas Watkins, Scranton; James L. Barr and Arthur Bright, Throop; Michael Arkins, Peckville; James R. McCormick, Thomas B. Brown, David L. Thomas and John J. Moran, Olyphant; John P. Dickie, Wilkes-Barre; Gwilym S. Davis, Priceburg; John Sammon, Dunmore; John Cooke, Carbondale, and M. J. McAuric, Archbald.

Board of Examiners.

M. G. Robertson, Superintendent, Jessup.
P. G. McDonaugh, Miner, Carbondale.
Jos. T. Roberts, Miner, Jermyn.
Edward Roderick, Mine Inspector.

TABLE I—Showing names of Operators, Railroads, etc., etc., and Location of Colleries in the First Anthracite District for the Year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Delaware and Hudson Co.						
Legitts Creek,	Lackawanna,	C. C. Rose,	Scranton,			Delaware and Hudson.
Marvine,	Lackawanna,	C. C. Rose,	Scranton,			Delaware and Hudson.
Eddy Creek,	Lackawanna,	C. C. Rose,	Scranton,			Delaware and Hudson.
Olyphant,	Lackawanna,	C. C. Rose,	Scranton,			Delaware and Hudson.
Grassy Island,	Lackawanna,	C. C. Rose,	Scranton,			Delaware and Hudson.
Grassy Island washery,	Lackawanna,	C. C. Rose,	Scranton,			Delaware and Hudson.
White Oak,	Lackawanna,	C. C. Rose,	Scranton,			Delaware and Hudson.
Jermyn,	Lackawanna,	C. C. Rose,	Scranton,			Delaware and Hudson.
Powderly,	Lackawanna,	C. C. Rose,	Scranton,			Delaware, and Hudson.
No. 1,	Lackawanna,	C. C. Rose,	Scranton,			Delaware and Hudson.
Racket Brook washery,	Lackawanna,	C. C. Rose,	Scranton,			Delaware and Hudson.
Coal Brook,	Lackawanna,	C. C. Rose,	Scranton,			Delaware and Hudson.
Clinton,	Wayne & Lack.	C. C. Rose,	Scranton,			Delaware and Hudson.
Temple Iron Co.						
Northwest,,	Lackawanna,	S. B. Thorne,	Scranton,	F. H. Hemebright,..	Jermyn	N. Y., Ont. and Western.
Edgerton,	Lackawanna,	S. B. Thorne,	Scranton,	F. H. Hemebright,..	Jermyn	Delaware and Hudson.
Sterrick Creek,	Lackawanna,	S. B. Thorne,	Scranton,	F. H. Hemebright,..	Jermyn	Delaware and Hudson.
Lackawanna,	Lackawanna,	S. B. Thorne,	Scranton,	F. H. Hemebright,..	Jermyn	N. Y., Ont. and Western.
Scranton Coal Co.						
Richmond No. 4,	Lackawanna,	John R. Bryden,	Scranton,	William L. Allen,...	Peckville,	N. Y., Ont. and Western.
Johnsons,	Lackawanna,	John R. Bryden,	Scranton,	John K. Berkheiser,.	Priceburg,	N. Y., Ont. and Western.
Ontario,	Lackawanna,	John R. Bryden,	Scranton,	William Allen,	Peckville,	N. Y., Ont. and Western.
Raymond,	Lackawanna,	John R. Bryden,	Scranton,	William Allen,	Peckville,	N. Y., Ont. and Western.
Richmond No. 3,	Lackawanna,	John R. Bryden,	Scranton,	John K. Berkheiser,.	Priceburg,	N. Y., Ont. and Western.
Hillside Coal and Iron Co.						
Clifford,	Susquehanna,	W. W. Inglis,	Scranton,	V. L. Petersen,	Forest City,	Erie.
Forest City,	Susquehanna,	W. W. Inglis,	Scranton,	V. L. Petersen,	Forest City,	Erie.
Erie,	Lackawanna,	W. W. Inglis,	Scranton,	John F. Gallagher,..	Mayfield,	Delaware and Hudson.
Keystone,	Lackawanna,	W. W. Inglis,	Scranton,	John F. Gallagher,..	Mayfield,	Delaware and Hudson.
Glenwood,	Lackawanna,	W. W. Inglis,	Scranton,	John F. Gallagher,..	Mayfield,	Delaware and Hudson.
Glenwood washery,	Lackawanna,	W. W. Inglis,	Scranton,	John E. Gallagher,..	Mayfield,	Delaware and Hudson.
Pennsylvania Coal Co.						
Gipsy Grove,	Lackawanna,	W. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie.
No. 1,	Lackawanna,	W. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie.
Del., Lack. & W. R. R. Co.						
Storrs,	Lackawanna,	E. E. Loomis,	Scranton,	R. A. Phillips,	Scranton,	Delaware, Lack & West.

Price, Pancoast Coal Co. Pancoast,	Lackawanna,	John R. Bryden,	Scranton,	J. J. Aitken,	Priceburg,	D., L. & W., & N. Y., O. and Western.
Dolph Coal Co. Dolph,	Lackawanna,	W. G. Robertson,	Jessup,	....	....	Erie.
Riverside Coal Co. Riverside,	Lackawanna,	J. M. Rice,	Peckville,	....	....	N. Y., Ont. and Western.
Moosic Mountain Coal Co. Moosic Mountain,	Lackawanna,	Chas. P. Ford,	Marshwood,	....	....	Moosic Mountain.
Mt. Jessup Coal Co. Mt. Jessup,	Lackawanna,	Chas. P. Ford,	Marshwood,	....	....	D., L. & W., Erie and N. Y., Ont. and West.
Carney & Brown. Murray,	Lackawanna,	John Carney,	Dunmore,	John Walsh,	Dunmore,	Del., Lack. & Western.
Clark Tunnel Coal Co. Clark Tunnel,	Lackawanna,	Morgan Davis, Jr.,	Scranton,	....	....	N. Y., Ont. and Western.
Black Diamond Coal Co. Black Diamond,	Lackawanna,	W. G. Thomas,	West Pittston,	....	....	N. Y., Ont. and Western.
W. L. Barton. Barton,	Lackawanna,	W. L Barton,	Carbondale,	....	....	N. Y., Ont. and Western.

TABLE II—Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the First Anthracite District for the year ending December 31, 190 .

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Delaware and Hudson Co.												
Leggetts Creek,	Lackawanna,	275,406	31,273	4,633	311,312	226.5	649	2	4	11,612	4,229	60
Marvine,	Lackawanna,	304,678	24,687	2,879	332,244	225	699	2	5	10,037	1,448	61
Eddy Creek,	Lackawanna,	234,082	7,969	229	242,280	230	577	......	5	10,820	3,636	53
Olyphant,	Lackawanna,	446,208	43,959	7,068	497,235	232	604	2	2	10,305	7,399	48
Grassy Island,	Lackawanna,	....	....	....	....	232	455	1	1	7,747	4,812	7
Grassy Island washery,	Lackawanna,	63,257	....	....	63,257	116.75	33	......	......	....	....	....
White Oak,	Lackawanna,	229,441	3,293	1,857	234,591	219.75	559	6	2	3,690	8,556	55
Jermyn,	Lackawanna,	231,761	13,862	3,998	219,621	177.25	600	1	6	4,956	900	49
Powderly,	Lackawanna,	42,035	5,173	....	47,208	202	332	......	......	4,614	1,440	42
No. 1,	Lackawanna,	50,690	6,171	....	56,861	169.75	434	......	4	3,078	3,290	59
Racket Brook washery,	Lackawanna,	5,518	3,300	....	8,818	50.75	8	......	......	....	....	....
Coal Brook,	Lackawanna,	539,719	13,343	....	553,062	231.75	919	2	7	10,693	5,024	82
Clinton,	Wayne and Lack'a,	313,515	14,122	2,240	329,877	219.25	589	3	3	11,573	17,450	57
Totals,		2,736,310	167,152	22,904	2,926,366	194.82	6,438	19	39	89,105	58,181	573
Temple Iron Co.												
Lackawanna,	Lackawanna,	208,883	34,955	3,723	217,561	218.9	674	4	2	8,704	982	82
Sterrick Creek,	Lackawanna,	265,464	16,255	1,583	283,302	178.3	712	3	4	9,268	17,000	81
Edgerton,	Lackawanna,	166,863	10,005	446	177,314	157.4	402	1	1	4,374	135	59
North West,	Lackawanna,	196,909	9,877	894	207,680	180.6	420	1	1	6,400	500	83
Totals,		838,119	71,092	6,646	915,857	183.8	2,208	9	8	28,746	18,617	305
Scranton Coal Co.												
Richmond No. 4,	Lackawanna,	30,969	5,840	1,822	38,631	115.3	201	......	......	1,750	4,400	25
Johnsons,	Lackawanna,	293,256	33,000	2,355	328,611	187.4	940	3	8	11,350	12,950	80
Ontario,	Lackawanna,	204,482	30,000	3,403	237,885	237.5	875	1	4	9,975	24,350	84

Richmond No. 3,	Lackawanna,	58,191	8,650	451	67,292	181.1	284	......	2	3,375	1,550	16
Raymond,	Lackawanna,	270,364	18,000	1,592	289,956	210.3	689	3	2	9,865	2,300	47
Totals,		857,262	95,490	9,623	962,375	186.3	2,989	7	16	36,315	45,550	252
Hillside Coal and Iron Co.												
Clifford,	Susquehanna,	292,038	9,550	6,072	171,462	162 65	470	......	2	7,218	6,677	50
Forest City,	Susquehanna,	331,576	20,453	3,798	492,025	184	939	......	2	17,594	5,087	88
Erie,	Lackawanna,	127,682	7,505	3,365	138,552	156.65	401	......	1	4,526	4,048	48
Keystone,	Lackawanna,	47,917	912	....	48,829	161.05	114	......	1	1,064	231	19
Glenwood,	Lackawanna,	41,813	13,222	....	60,035	57.25	270	2	1	1,074	2,211	29
Glenwood washery,	Lackawanna,	33,844	....	....	33,844	182.4	11	......	......	....	....	....
Totals,		874,870	56,642	13,235	944,747	150.73	2,205	2	7	31,476	18,254	214
Pennsylvania Coal Co.												
Gipsy Grove,	Lackawanna,	200,090	5,590	....	205,681	171.6	581	2	3	8,424	1,692	48
No. 1,	Lackawanna,	124,413	3,252	....	127,664	164.4	273	1	4	5,064	816	39
Totals,		324,503	8,842	....	333,345	168	954	3	7	13,488	2,508	87
Delaware, Lack'a & Western R. R. Co.												
Storrs,	Lackawanna,	579,185	25,947	4,177	609,309	221.1	1,238	4	16	22,292	10,552	121
Price, Pancoast Coal Co.												
Pancoast,	Lackawanna,	313,047	22,750	2,856	338,653	283.75	827	5	16	16,834	13,882	85
Dolph Coal Co.												
Dolph,	Lackawanna,	182,885	25,000	807	208,692	200.9	558	2	3	6,658	5,250	37
Riverside Coal Co.												
Riverside,	Lackawanna,	123,625	11,050	680	135,355	232.2	296	2	2	4,8 1	125	36
Moosic Mountain Coal Co.												
Moosic Mountain,	Lackawanna,	109,718	3,000	2,330	115,048	172	262	1	......	5,387	1,700	41
Mt. Jessup Coal Co.												
Mt. Jessup,	Lackawanna,	66,352	25,000	1,427	92,779	244.8	349	2	3	1,150	27,371	43
Carney & Brown.												
Murray,	Lackawanna,	65,772	60	9,503	75,335	238.5	141	......	......	3,053	391	23
Clark Tunnel Coal Co.												
Clark Tunnel,	Lackawanna,	14,548	2,373	18,960	35,881	235.8	151	1	1	1,169	5,250	37
Black Diamond Coal Co.												
Black Diamond,	Lackawanna,	21,692	5,000	2,871	29,563	118.2	132	1	......	1,376	2,000	12
W. L. Barton Coal Co.												
Barton,	Lackawanna,	92	500	4,447	5,039	150	25	......	......	200	75	6
Grand totals,		7,107,980	519,898	100,466	7,728,344	198.7	18,773	58	118	262,080	204,959	1,853

TABLE II—Continued.

Names of Operators and Collieries.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Delaware and Hudson Co.,	Lackawanna,	167	3,340	26	4,750	8,080	7	8	......	169	9,503	34	31,077	22,805	......	6
Temple Iron Co.,	Lackawanna,	68	2,301	10	1,400	3,701	12	......	......	44	3,855	7	6,250	4,636	1	3
Scranton Coal Co.,	Lackawanna,	44	1,255	33	3,605	4,860	8	......	6	73	5,730	16	10,384	5,240	4	4
Hillside Coal and Iron Co.,	Lackawanna,	26	460	35	2,835	3,295	4	......	6	38	3,455	23	12,458	9,775	7	......
Pennsylvania Coal Co.,	Lackawanna.	......	....	7	1,000	1,000	2	......	......	26	1,947	6	3,235	800	......	......
Delaware, Lack'a and Western R. R. Co.,	Lackawanna,	12	360	11	1,386	1,746	3	......	......	20	1,860	2	2,040	1,184	......	......
Price, Pancoast Coal Co.,	Lackawanna,	15	285	7	1,209	1,485	......	......	......	12	1,226	2	1,500	1,000	2	1
Dolph Coal Co.,	Lackawanna,	4	80	7	770	850	2	......	......	14	721	4	670	100	1	3
Riverside Coal Co.,	Lackawanna,	9	180	4	320	500	......	......	......	11	821	2	850	775	......	......
Moosic Mountain Coal Co.,	Lackawanna,	7	175	2	100	275	1	......	......	6	210	2	500	400	1	......
Mt. Jessup Coal Co.,	Lackawanna,	20	500	8	675	1,175	1	......	......	16	900	4	3,500	2,500	......	1
Carney & Brown Coal Co.,	Lackawanna,	......	....	3	90	270	......	......	......	4	115	....	....	....	......	......
Clark Tunnel Coal Co.,	Lackawanna,	......	....	3	295	295	......	......	......	4	170	1	100	50	......	......
Black Diamond Coal Co.,	Lackawanna,	3	90	....	....	90	......	......	......	2	39	....	....	....	......	......
W. L. Barton Coal Co.,	Lackawanna,	......	....	2	80	160	......	......	......	4	85	1	50	50	......	......
Grand total,	....	375	9,026	158	18,506	27,782	39	8	12	437	30,637	104	72,614	49,315	16	18

TABLE III—Showing the number of each class of employes at each colliery in the First Anthracite District, during the year 1901

Names of Operators and Collieries	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	Grand total inside and outside.
Delaware and Hudson Co.																	
Leggetts Creek,	Lackawanna,	2	6	175	175	64	17	74	513	1	7	21	43	1	63	136	649
Marvine,	Lackawanna,	2	7	160	160	94	30	96	549	1	8	14	62	....	65	150	699
Eddy Creek,	Lackawanna,	2	3	154	170	53	8	47	437	1	7	12	63	1	56	140	577
Olyphant,	Lackawanna,	2	3	143	164	55	11	52	430	1	8	11	77	2	75	174	604
Grassy Island,	Lackawanna,	3	......	160	160	50	8	24	405	1	2	17	....	....	30	50	455
Grassy Island washery,	Lackawanna,	......	......	....	....	....	....	....	....	.....	1	1	12	....	18	33	33
White Oak,	Lackawanna,	1	......	168	151	69	3	37	429	1	3	6	32	....	68	110	539
Jermyn,	Lackawanna,	2	......	199	191	61	20	49	522	1	6	5	36	....	30	78	600
Powderly,	Lackawanna,	1	......	202	10	44	3	28	288	.....	3	8	6	....	27	44	332
No. 1,	Lackawanna,	1	......	172	79	60	4	30	316	1	5	9	8	....	65	88	434
Racket Brook washery,	Lackawanna,	......	......	....	....	....	....	....	....	1	......	2	4	....	1	8	8
Coal Brook,	Lackawanna,	5	......	293	200	99	23	37	657	1	5	10	122	1	123	262	919
Clinton,	Wayne and Lackawanna,	3	......	154	172	67	17	34	447	1	6	11	62	... .	62	142	589
Totals and averages,	....	24	19	1,980	1,632	716	144	508	5,023	12	61	127	527	5	683	1,415	6,438
Temple Iron Co.																	
North West,	Lackawanna,	2	......	118	97	33	10	35	295	1	10	13	40	3	58	125	420
Edgerton,	Lackawanna,	2	......	95	96	27	1	14	235	1	8	9	65	3	81	167	402
Sterrick Creek,	Lackawanna,	2	......	224	159	91	20	44	540	1	9	11	63	3	85	172	712
Lackawanna,	Lackawanna,	2	1	187	160	82	12	83	527	1	8	17	66	3	52	147	674
Totals and averages,	....	8	1	624	512	233	43	176	1,597	4	35	50	234	12	276	611	2,208

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Scranton Coal Co.																	
Richmond No. 4,	Lackawanna,	1	......	40	45	16	2	37	141	1	4	5	15	1	34	60	201
Johnsons,	Lackawanna,	2	5	260	250	95	30	73	715	1	11	20	105	3	85	225	940
Ontario,	Lackawanna,	2	......	290	175	78	6	58	609	1	13	22	128	3	99	266	875
Richmond No. 3,	Lackawanna,	1	2	75	80	23	6	25	212	1	4	15	25	2	25	72	284
Raymond,	Lackawanna,	2	......	220	205	37	25	31	529	1	8	15	81	2	53	160	689
Totals and averages,		8	7	894	755	249	69	224	2,206	5	40	77	354	11	296	783	2,989
Hillside Coal and Iron Co.																	
Clifford,	Susquehanna,	1	......	134	109	45	6	30	325	1	3	7	55	3	76	145	470
Forest City,	Susquehanna,	3	......	293	293	81	23	86	779	1	12	14	57	3	73	160	939
Erie,	Lackawanna,	2	......	101	102	52	8	32	297	1	4	10	65	2	22	104	401
Keystone.	Lackawanna,	1	......	30	30	17	......	5	83	1	2	2	12	1	13	31	114
Glenwood,	Lackawanna,	2	......	80	72	15	3	25	197	1	4	11	30	2	25	73	270
Glenwood washery,	Lackawanna,	......	......	......	......	......	......	......	......	......	......	......	4	......	7	11	11
Totals and averages,		9	......	638	606	210	40	178	1,681	5	25	44	223	11	216	524	2,205
Pennsylvania Coal Co.																	
Gipsy Grove,	Lackawanna,	1	1	140	20	65	12	26	265	1	2	12	49	1	43	108	373
No. 1,	Lackawanna,	2	2	166	136	68	11	60	445	1	4	18	66	1	46	136	581
Totals and averages,		3	3	306	156	133	23	86	710	2	6	30	115	2	89	244	954
Del., Lack'a & West. R. R. Co.																	
Storrs,	Lackawanna,	4	7	257	385	124	19	141	1,037	2	7	22	86	3	81	201	1,238

Price Pancoast Coal Co. Pancoast,	Lackawanna,	3	6	175	185	94	29	109	601	1	7	18	119	5	76	226	827
Dolph Coal Co. Dolph,	Lackawanna,	2	......	135	120	60	4	29	350	1	7	15	127	4	54	208	558
Riverside Coal Co. Riverside,	Lackawanna,	1	1	112	57	35	8	11	225	1	5	9	30	2	24	71	296
Moosic Mountain Coal Co. Moosic Mountain,	Lackawanna,	1	......	89	69	41	11	15	226	1	8	8	....	5	14	36	262
Mt. Jessup Coal Co. Mt. Jessup,	Lackawanna,	2	1	66	57	24	10	44	204	1	13	30	88	8	5	145	349
Carney & Brown. Murrays,	Lackawanna,	1	......	30	30	24	5	13	103	1	2	2	16	1	16	38	141
Clark Tunnel Coal Co. Clark Tunnel,	Lackawanna,	1	1	36	27	10	1	24	100	1	3	4	17	3	23	51	151
Black Diamond Coal Co. Black Diamond,	Lackawanna,	1	1	36	37	11	2	4	92	1	2	3	12	1	21	40	132
W. L. Barton Coal Co. Barton,	Lackawanna,	1	......	6	6	2	....	....	15	1	1	2	3	1	2	10	25
Totals,	....	69	47	5,484	4,634	1,966	408	1,562	14,170	39	222	441	1,951	74	1,876	4,603	18,773

TABLE III—Continued.

Names of Operators and Collieries.	County.	Number of Days Worked Each Month in Breaker.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Delaware and Hudson Co.,	Lackawanna,	18.9	16.37	19.33	11.51	14.76	15.28	15.15	19.56	16.66	15.33	16.71	15.93	194.82
Temple Iron Co.,	Lackawanna,	19.025	14.25	16.625	13.725	15.475	16.025	15.05	16.07	13.9	15.375	14.65	13	183.8
Scranton Coal Co.,	Lackawanna,	18.06	13.98	16.86	12.5	17.76	14.26	14.88	16.08	14.68	18.64	14.96	13.68	186.3
Hillside Coal and Iron Co.,	Lackawanna,	15.71	9.65	12.36	13.05	13.6	14.2	10.925	15.21	10.975	13.325	10.983	10.39	150.73
Pennsylvania Coal Co.,	Lackawanna,	15.75	15.15	16.05	12.4	13.35	14.65	13.9	13.9	14.45	11.6	14.7	12	168
Delaware, Lackawanna and Western R. R. Co.,	Lackawanna,	22.2	18.8	20.9	12.6	18.7	16.1	7.4	24.1	17.6	21.3	21.4	20	221.1
Price Pancoast Coal Co.,	Lackawanna,	25.75	23.25	26	23.5	24.75	23.5	18.75	27	21.25	26	24	20	283.75
Dolph Coal Co.,	Lackawanna,	18.1	18	22	11.5	14	18.7	16.6	17.3	14.2	16.5	17	17	200.9
Riverside Coal Co.,	Lackawanna,	23.9	18.6	23.9	15.1	19.6	19.7	18.8	20.1	18.2	19.8	20.4	14.1	232.2
Moosic Mountain Coal Co.,	Lackawanna,	13	13	15	14	16	14	15	12	17	20	16	7	172
Mt. Jessup Coal Co.,	Lackawanna,	21.8	20.6	23.2	19.5	21.4	19.5	18.7	17.1	19.8	24.3	21	17.9	244.8
Carney & Brown Coal Co.,	Lackawanna,	23	21.4	23.7	18.3	23	23	21.2	....	16	25	23.5	20.4	238.5
Clark Tunnel Coal Co.,	Lackawanna,	24.5	23.8	25	20.5	19.4	18.1	15.7	18.6	16.1	18.9	19.1	16.1	235.8
Black Diamond Coal Co.,	Lackawanna,	5.1	5.7	7.6	6.2	14.8	6.2	6.4	10.5	11.1	13.1	19.8	11.7	118.2
W. L. Barton Coal Co.,	Lackawanna,	20	20	20	8	7	5	4	4	6	11	20	25	150
Grand totals,	....	18.983	16.836	19.235	14.159	16.906	15.881	14.163	15.43	15.194	18.01	18.28	15.61	198.7

TABLE IV—List of fatal accidents that occurred in and about the mines of First Anthracite District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	2	Pasquale Gardullo, ...	Italian, ...	Laborer, ..	30	M.	1	1	Pancoast, ...	Lackawanna,	The miner had just fired a shot and was trimming down some top coal, when the roof gave way, falling on him and laborer.
	4	George Bates, ...	American, ...	Dumper, ..	42	M.	1	3	Lackawanna, ...	Lackawanna,	While dumping a car of culm on a trestle twenty feet high, he slipped and fell to the ground and was fatally injured. He died on the following day. He was subject to fits, and it is supposed he was attacked with one at this time.
	5	William Smith, ...	Welsh, ...	Driver, ...	18	S.	....	....	Lackawanna, ...	Lackawanna,	While driving a mule hitched to a trip of empty cars on a gangway, the mule turned up into a chamber, while the cars ran on the straight road until pulled off the track and against a prop, dislodging it from under a bad piece of roof, letting it down on the boy, killing him instantly.
	6	Watkin Williams, ...	Welsh, ...	Miner, ...	24	S.	....	....	Storrs No. 1, ...	Lackawanna,	He charged two holes, then inserted a squib in each, lt them and retired to a place of safety. In a short time one of the blasts exploded and one of the men who was with him started for the face, but he stopped him, remarking that he was firing two shots. He waited a few minutes then started back, thinking the other had "missed," the face the shot exploded, killing him instantly.
	13	Thomas Green, ...	English, ...	Driver, ...	18	S.	....	....	Ontario, ...	Lackawanna,	Head crushed between cars while trying to uncouple them while they were in motion.

TABLE IV—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	19	John Tranovich, ...	Pole, ...	Laborer, .	36	M.	1	....	Lackawanna, ...	Lackawanna,	While the miner was working under a piece of roof, which he had examined shortly before, it fell and injured him and killed the laborer.
	30	Thomas Champion, ...	English, ...	Miner, ...	52	M.	1	....	Jermyn, ...	Lackawanna,	After lighting a squib to fire a blast in "top bench," he and his fellow miner retired to a place of safety. Then after a few minutes, thinking the squib had "missed," both returned and were placing a scaffold to raise them high enough to insert another squib, the blast exploded, fatally injuring Champion, while his companion escaped.
Feb.	10	Thomas Healey, ...	Irish, ...	Laborer, ..	40	M.	....	1	Marvine, ...	Lackawanna,	While making a temporary road through an abandoned opening, a slab of rock, which had been examined by the assistant foreman and was thought to be safe, fell, and so seriously injured him that he died two hours later.
	12	Michael McGowen, ...	American, ...	Laborer, ..	27	S.	....	....	White Oak, ...	Lackawanna,	These two men were returning to the face of their chamber after a blast. The miner in the lead walked up to the face while the laborers were picking the coal thrown by the shot from the track, when a "saddle" of rock fell and instantly killed them.
	12	William Uglo, ...	American, ...	Laborer, ..	18	S.	....	....	White Oak, ...	Lackawanna.	
	20	Lawrence Cantwell, ...	Irish, ...	Timberman	35	S.	....	....	Glenwood, ...	Lackawanna,	Was one of a gang timbering to prevent a "squeeze" from spreading, when suddenly a cave occurred, and he was thrown violently by the force of the wind against the "rib," causing a fracture of the skull.

	21	Peter Malia,	Irish,	Laborer,	35	M.	1	2	Raymond,	Lackawanna,	The miner had drilled a hole in a slab of roof rock for the purpose of blasting it down, and had told Malia not to go under it, as it was dangerous. He disobeyed orders and was killed by it falling.
March	5	Stephen Howey,	American,	Miner,	45	M.	1	2	Johnsons,	Lackawanna,	He was "opening a chamber," and had fired two shots which had removed the coal from under a slab of rock. His brother, who was laboring for him, thought the rock was unsafe, and told him so. He replied that "he guessed it was all right," but just as he spoke it fell and killed him.
	28	John Spilko,	Hungarian,	Laborer,	34	M.	1	1	Simpson,	Lackawanna,	Struck by a trip of empty cars as he was walking on a slope on his way to work.
April	2	Tony Santerelli,	Italian,	Laborer,	27	M.	1	2	Dolph,	Lackawanna,	This man's miner returned to the face of his gangway after a blast, and was "working out" some loosened coal, when the laborer approached, and while the latter was standing on the lower side of the gangway watching the miner working, a strange thing occurred i nthe form of a second explosion, which fatally injured the laborer, while the miner escaped with slight injuries.
	3	Fred. Halfpenny,	English,	Runner,	20	S.	....	....	Pancoast,	Lackawanna,	Was riding down a "short run" on front end of a car which collided with another and fractured his leg and otherwise injured him.
	16	Michael Jorden,	American,	Laborer,	46	M.	1	5	Coal Brook,	Lackawanna,	After firing two blasts in a piece of roof which he and others were taking down, and after trying to bar it down and failing, they ceased their efforts for awhile to rest, and while doing so, it fell and caught Jorden.
	23	Theodore Bawack,	Russian,	Laborer,	30	M.	1	1	Glenwood,	Lackawanna,	While loading a car at the face of a chamber, a slab of rock fell and broke his back. He died on May 15.
	24	Thomas Johns,	English,	Miner,	54	M.	1	3	Clinton,	Lackawanna,	While working with a pick at the face of his chamber, a small piece of top coal, which he had several times previously examined and thought to be safe, fell on him and broke his back. He died on the 27th.
May	22	Anthony Lynott,	Irish,	Miner,	52	M.	1	2	Sterrick Creek,	Lackawanna,	He was mining out a piece of a "middle bench" when a piece of coal fell and almost instantly killed him.
June	1	Berney Budufski,	Pole,	Driver,	15	S.	....	....	Johnsons,	Lackawanna,	A miner refused to clear some coal which had been blown on the track by a recently fired shot, and while this young boy was clearing it, a fall of rock occurred and killed him.

TABLE IV—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
June 3	Thomas Halfpenny,	English,	Runner,	20	S.	....	....	Pancoast,	Lackawanna,	He tried to couple cars on a branch while they were in motion, and his head was so severely crushed that he died two days afterward.
11	Evan Williams,	Welsh,	Miner,	46	M.	1	....	Clinton,	Lackawanna,	While mining at the face of his chamber, a piece of top coal fell and fatally injured him. He mined out the bottom bench after a shot which failed to "cut."
13	Frank Woelzik,	Russian,	Miner,	45	M.	1	5	Sterrick Creek,	Lackawanna,	While loading a car at the face of his chamber, a piece of rock fell and broke his neck.
24	Tony Coda,	Italian,	Miner,	24	M.	1	....	Edgerton,	Lackawanna,	While loading coal under a bench of top coal two feet thick, in which he had already drilled a hole preparatory to blasting it down, it fell on him.
25	Jacob Rushak,	Pole,	Miner,	33	M.	1	3	Storrs No. 1,	Lackawanna,	While preparing to drill a hole at the face of his chamber, a "bell," two feet in diameter, fell and killed him.
July 10	Anthony Marcon,	Slav,	Laborer,	36	S.	....	....	Clinton,	Lackawanna,	The miner at the face of a gangway, after "working out a shot" stepped to one side to allow the laborer to shovel it away, but just as he stepped into the miners place a fall of rock occurred which killed him.
12	Frank Sabatina,	Italian,	Laborer,	28	M.	1	....	Riverside,	Lackawanna,	This man and another were in a car that became detached just as it was going over the angle of a short slope, and ran to the bottom, where it collided with another, and so seriously injured him that he died on the same day.

	25	Angelo Genarre,	Italian,	Laborer,	36	S.	....	....	Mt. Jessup,	Lackawanna,	After an unsuccessful effort on the port of the miner and his laborer to pry down a piece of top coal, they went to work under it, when it gave way and fatally injured the laborer.
Aug.	7	John Cristoff,	Slav,	Miner,	27	M.	1	1	No. 1 shaft,	Lackawanna,	Shortly after returning to the face of his chamber, after firing a shot, a slab of rock fell on him and broke his back. He died on the 23d.
	16	John Blaschock,	Slav,	Miner,	38	M.	1	1	Mt. Jessup,	Lackawanna,	While tamping a hole at the face of his chamber, a slab of rock fell and crushed him to death.
	27	Martin McCormick,	American,	Miner,	40	M.	1	4	Gipsy Grove,	Lackawanna,	While tightening a cap piece over a prop, which had been loosened by a blast, a slab of rock fell, severely injuring him, and causing his death the same day.
	29	Anthony Corcoran,	American,	Runner,	18	S.	....	....	Leggetts Creek,	Lackawanna,	While stepping from one side of a track to the other on a slope, he tripped on a rope and fell in front of cars and was killed.
Sept.	5	Peter Dunn,	Hungarian,	Slate picker	26	S.	....	....	Olyphant,	Lackawanna,	He went into a culm pocket to shovel culm, and was drawn through and smothered.
	6	Lewis Pefenski,	Italian,	Miner,	37	S.	....	....	Moosic Mountain,	Lackawanna,	While standing on a slope, one of a trip of cars that was descending became uncoupled, ran down the slope to the third lift, where it left the track, striking him and causing his death.
	23	John Tool,	Irish,	Loader,	50	S.	....	....	Marvine,	Lackawanna,	While trying to start a railroad gondola with a pinch bar, another ran against him from behind and killed him.
	23	George Yolkafski,	Pole,	Laborer,	20	S.	....	....	Pancoast,	Lackawanna,	He in some unknown way, after working hours walked into the shaft at No. 3 vein, and fell a distance of 360 feet. There was a door twenty feet from shaft, and a gate three feet from edge of shart, both of which had to be opened by him before reaching the shaft. This was his first day in the mine, and it is presumed that his light went out.
Oct.	1	John Megholso,	Slav,	Miner,	36	S.	....	....	No. 2 shaft,	Lackawanna,	He was placing a set of timber and had the collar supported by a temporary leg while he was making place for the permanent one, and he struck and displaced the support, causing the collar to fall on him, crushing his skull.
	9	Joe Bucklovia,	Italian,	Laborer,	26	M.	1	2	Raymond,	Lackawanna,	While loading a car at face of chamber, a large "saddle" shaped rock gave way above a small bench of coal and instantly killed him.

TABLE IV—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Oct.	11	William Foley,	American,	Laborer,	32	S.	....	....	Olyphant,	Lackawanna,	While shoveling coal at the face of a chamber, a small piece of top coal and rock gave way, and so seriously injured him that he died on his way home.
	11	Anthony Peare,	Pole,	Laborer,	30	S.	....	....	Lackawanna,	Lackawanna,	As a mule was pulling a car to the face of a chamber by means of a chain and pulley, the prop to which the pulley was attached gave way, allowing the car to run back to a stopping block fifteen feet below, where it was thrown from the track against the "rob," where Peare was standing. He was fatally injured and died in a few hours.
	16	Patrick H. Mealon,	American,	Assistant foreman,	29	M.	1	1	White Oak,	Lackawanna,	A new plane, across old chambers, was in course of construction, and a loaded car was run down from the face with all wheels spragged, but when within a short distance from the bottom, it left the track and displaced three props. The runner, who went down after it, learned the situation, then returned a short distance up the plane and shouted to the men at the face to come down and bring their tools with them to clear the wreck. Mealon, Kearney, Healy and Dougher came down. Mealon, the assistant foreman, and a very careful man, took a hammer and placed one hand against the roof while he struck it with the ham-
	16	John Healy,	American,	Laborer,	38	M.	....	2	White Oak,	Lackawanna,	

	16	John Kearney,	American,	Laborer,	31	S.	....	....	White Oak,	Lackawanna,	mer, and thus made a careful examination of the whole space from which the props had been removed. After this, all hands began to reload the car and in a few minutes had it filled, and run out, then began the work of re-standing the props, and while Healy was wedging the first, a great mass of rock fell and instantly killed the four men. It was afterward seen that there were two large and very treacherous "bells" directly over where Healy was placing the prop; these gave way and caused the fall.
	16	Mathew Dougher,	American,	Driver,	20	S.	....	....	White Oak,	Lackawanna,	
	22	Michael Chilozinski,	Pole,	Laborer,	43	M.	1	....	Pancoast,	Lackawanna,	While stepping across a track, after being told not to do so, as a car was about to be run down; he was struck and fatally injured, and died Nov. 2.
Nov.	6	Edward McDermott,	Irish,	Crusher boy	15	S.	....	....	Coal Brook,	Lackawanna,	While going toward the chute conveying coal to a pair of small crushers, he fell on the pinion wheels, which at the time were uncovered, a plank from the top of them having been temporarily removed by some person unknown. He died four hours after.
	14	Frank Simonski,	Pole,	Miner,	41	M.	1	4	Dolph,	Lackawanna,	While preparing to drill a hole at the face of his chamber, a "faulty" piece of rock fell on him.
	15	John Mackey,	American,	Miner,	27	S.	....	....	Sterrick Creek,	Lackawanna,	After reaching the face of his chamber, a blast, a large slab of rock fell and killed him.
	16	John Slocki,	Slav,	Miner,	56	M.	1	5	Black Diamond,	Lackawanna,	Instantly killed by a fall of sand rock, which occurred when he was at the "working face."
	21	Daniel Walerspiel,	American,	Miner,	39	S.	....	....	Storrs No. 3,	Lackawanna,	Was thawing a stick of dynamite with a mine lamp, when it exploded, mangling his arms and body, causing his death in a short time.
	23	John Devexs,	American,	Driver,	16	S.	....	....	Leggetts Creek,	Lackawanna,	He was riding on an air motor: and was shaken off and killed at a point one thousand feet away from his post.
	25	Domminic Sorifini,	Italian,	Miner,	22	S.	....	....	Riverside,	Lackawanna,	After being told by the person acting as fire boss, also by the miner working next to him in his own language, to go home as there was gas in his place, he nevertheless, in the absence of the fire boss ventured in to load one car, as he said, and was fatally burned by an explosion of gas.

TABLE IV—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Dec. 6	William McCormick, ...	Irish.	Miner, ...	64	M.	1	....	Storrs No. 1, ...	Lackawanna,	He had on the preceding day, fired a shot on the "rib" to widen his place, and was, when injured, barring out the loosened coal from the "middle" bench, when a piece of top bench fell, causing fatal injuries; he died four hours later.
11	James McManamam, ...	American, ...	Laborer, ..	40	M.	1	....	Clark Tunnel, ...	Lackawanna,	While in a stooping position, a "slippy" piece of rock from the side of the gangway fell, and injured him so that he died on the following day.
19	Jacob Onelonski, ...	Pole, ...	Laborer, ..	31	M.	1	1	Johnsons No. 2, ...	Lackawanna,	Acharge of powder which the miner was trying to force to the back of a hole with a drill exploded, causing severe injuries to the miner and fatal injuries to the laborer, who died on the following day.
19	James Fannan, ...	American, ...	Footman, .	25	S.	....	....	Grassy Island, ...	Lackawanna,	While pushing an empty car off the cage at the foot of a shaft, a piece of ice fell down and first striking the cover of cage and glancing off, struck Fannan on side of head, causing what is supposed to have been concussion of the brain. He died on the 25th.
23	Leon Yablovenski, ...	Pole, ...	Miner, ...	30	M.	1	....	Raymond, ...	Lackawanna,	While thawing dynamite by use of his mine lamp, it exploded and blew him to pieces.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the First Anthracite District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	2	Michael Zernack,	Hungarian,	Miner,	35	M.	Eddy Creek,	Lackawanna,	Severely burned by an explosion of gas.
	2	George Gotch,	Hungarian,	Laborer,	50	M.	Eddy Creek,	Lackawanna,	Severely burned by an explosion of gas.
	16	Michael Moran,	American,	Dumper,	32	M.	No 1 slope,	Lackawanna,	Arm injured by props rolling against him necessitating amputation.
	16	Charles Pasten,	English,	Miner,	44	M.	Pancoast,	Lackawanna,	Face and hands burned by gas.
	19	Frank Fallon,	American,	Driver,	17	S.	Olyphant,	Lackawanna,	Leg fractured by cars while he was riding between them.
	21	Joseph Bunone,	Italian,	Miner,	45	M.	Glenwood,	Lackawanna,	Hip dislocated by fall of coal.
	21	Peter Munphey,	American,	Brakeman,	18	S.	Mervine,	Lackawanna,	Leg fractured by prop falling on it.
	22	Thomas Laftus,	Irish,	Laborer,	50	M.	No. 1 Slope,	Lackawanna,	Leg fractured by car pushing a prop against it.
	26	Paul Dunney,	Pole,	Laborer,	30	S.	Marvine,	Lackawanna,	Leg fractured by car jumping track at head block.
	28	George Burnhardt,	German,	Miner,	29	S.	Coal Brook,	Lackawanna,	Back and foot injured by fall of coal.
	28	John Alexander,	Welsh,	Miner,	43	M.	Storrs No. 2,	Lackawanna,	Body injured by fall of rock at face of chamber.
	28	Michael Hoofin,	Austrian,	Miner,	26	M.	Johnsons No. 1,	Lackawanna,	Burned by gas which had been ignited by a blast.
	29	Joseph Shutah,	Pole,	Miner,	42	M.	Lackawanna,	Lackawanna,	Injured by fall of rock.
	30	Harry Bandebury,	English,	Driver,	17	S.	Ontario,	Lackawanna,	Leg bruised by car jumping track.
	31	Frank Butchnaski,	Pole,	Driver,	16	S.	Johnsons No. 1,	Lackawanna,	Leg fractured by mule suddenly jerking car.
Feb.	2	Samuel Edwards,	Welsh,	Miner,	56	M.	Eddy Creek,	Lackawanna,	Leg fractured by a rope at head of slope.
	5	Vivant Prolochuck,	Pole,	Slate picker,	14	S.	Edgerton,	Lackawanna,	Leg fractured by slipping against a chain in breaker.
	13	Dominic Reddington,	Irish,	Miner,	32	M.	Eddy Creek,	Lackawanna,	Ribs fractured by having been crushed between a car and a prop.

TABLE V—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Feb.	15	Burton B. Smith, ...	American, ...	Driver, ...	33	M.	Storrs No. 2, ...	Lackawanna,	Severely injured by having been squeezed between two trips of cars.
	18	Harry Lee, ...	American, ...	Driver, ...	17	S.	Storrs No. 3, ...	Lackawanna,	Hand crushed between cars.
	28	Gwilm Davis, ...	American, ...	Brattice man,.	25	M.	Eddy Creek, ...	Lackawanna,	Face and hands burned by an explosion of gas.
March	4	Henry Pilger, ...	German, ...	Door boy, ...	16	S.	No. 2 shaft, ...	Lackawanna,	Slipped when trying to get on cars.
	5	Samuel Sears, ...	American, ...	Laborer, ...	51	S.	Coal Brook, ...	Lackawanna,	A piece of coal rolled down a pitch against his leg and broke it.
	8	William McGinty, ...	American, ...	Driver, ...	15	S.	Olyphant, ...	Lackawanna,	Tripped on a rail; his arm was broken.
	11	Cornelius Colprice, ...	Irish, ...	Miner, ...	36	M.	Storrs No. 3, ...	Lackawanna,	Struck on head by a piece of coal.
	18	Edward Sullivan, ...	Irish, ...	Driver, ...	15	S.	Raymond, ...	Lackawanna,	Leg fractured by falling under a car.
		P. F. Morrison, ...	American, ...	Runner, ...	21	S.	Clifford, ...	Lackawanna,	Cars jumped the track and crushed his arm so that amputation was necessary.
	21	Michael Manoric, ...	Pole, ...	Laborer, ...	48	M.	Forest City, ...	Susquehanna,	Leg fractured by cars running against him.
	24	Tony Roman, ...	Slav, ...	Miner, ...	34	M.	Grassy Island, ...	Lackawanna,	Fall of rock dislocated his hip.
	30	Thomas Coleman, ...	American, ...	Miner, ...	27	S.	White Oak, ...	Lackawanna,	Head injured by a falling prop.
April	2	Dominic Rossi, ...	Italian, ...	Miner, ...	30	M.	Dolph, ...	Lackawanna,	Slightly injured by explosion of blast.
	3	Steve Kozo, ...	Slav, ...	Laborer, ...	22	S.	Sterrick Creek, ...	Lackawanna,	Squeezed between two cars.
	11	John Tubko, ...	Pole, ...	Laborer, ...	24	M.	Clinton, ...	Lackawanna,	Leg fractured by a piece of rock falling on it.
	13	Thomas Hyland, ...	Irish, ...	Miner, ...	50	M.	Leggetts Creek, ...	Lackawanna,	Face severely injured by a premature explosion of a blast; used his lamp instead of "touch paper" to light a squib.
	22	Thomas Pierce, ...	American, ...	Miner, ...	42	M.	Storrs No. 2, ...	Lackawanna,	Leg broken by a fall of rock.
	22	John Duffy, ...	Irish, ...	Miner, ...	48	M.	Clark Tunnel, ...	Lackawanna,	Leg sprained by fall of coal at face of chamber.
	24	William Thomas, ...	American, ...	Driver, ...	16	S.	Storrs No. 2, ...	Lackawanna,	Car jumped the track and broke his leg.

	25	Frank Smith,	American,	Slate picker,	14	S.	Pancoast,	Lackawanna,	Arm crushed by climbing out of his place in the breaker and coming in contact with machinery.
	29	Peter Quinn,	Irish,	Runner,	23	S.	Pancoast,	Lackawanna,	Arm fractured by falling in front of a car.
	30	Adam Romanchock,	Pole,	Miner,	42	M.	Pancoast,	Lackawanna,	Skull crushed by a fall of rock at face of chamber.
May	1	Paul Kulak,	Pole,	Laborer,	24	S.	Marvine,	Lackawanna,	Hand burned by explosion of gas.
	1	John Kernan,	Irish,	Miner,	55	M.	Storrs No. 1,	Lackawanna,	Leg fractured by fall of rock.
	3	Richard Griffith,	Welsh,	Runner,	25	M.	Lackawanna,	Lackawanna,	Caught between door and car; his leg was broken.
	7	Benjamin Thomas,	American,	Driver,	16	S.	Gipsy Grove,	Lackawanna,	Fell under a car and his face was severely cut.
	8	George Savage,	Hungarian,	Door boy,	14	S.	Pancoast,	Lackawanna,	Car jumped the track and cut his leg.
	9	Adam Chernicki,	Pole,	Miner,	25	S.	Dolph,	Lackawanna,	Rock fell on him and bruised his back and hips.
	20	William Freize,	Welsh,	Miner,	32	M.	Storrs No. 2,	Lackawanna,	Coal fell on him and injured his spine.
	20	Thomas Turner,	American,	Miner,	35	M.	Storrs No. 1,	Lackawanna,	Rock fell on him and fractured one of his ribs.
June	6	William Hodgson,	English,	Sinker,	32	M.	Pancoast,	Lackawanna,	These men were engaged deepening the Pancoast air shaft. The shift preceding had quit work about 6 o'clock in the morning, and this shift was to start at 2 o'clock. Hodgson was in charge, but not having found much gas, he failed to go down to examine the place with a safety lamp, as he should have done before the men started down on the bucket. When four of them were descending on a bucket fastened to the bottom of the cage, and two others on the cage about thirty feet above, an explosion of gas occurred and very severely burned Carden and Northrup; the others were not so severely injured.
	6	George Short,	English,	Sinker,	30	S.	Pancoast,	Lackawanna,	
	6	James Carden,	Irish,	Sinker,	34	M.	Pancoast,	Lackawanna,	
	6	George Northrup,	English,	Sinker,	45	M.	Pancoast,	Lackawanna,	
	6	Michael Salahar,	Irish,	Sinker,	40	M.	Pancoast,	Lackawanna,	
	6	Harry Bray,	English,	Sinker,	30	S.	Pancoast,	Lackawanna,	
	11	Paul Sheptock,	Pole,	Driver,	42	M.	Simpson,	Lackawanna,	Leg caught between cars and fractured.
	14	William Deorle,	American,	Brakeman,	22	S.	Johnsons,	Lackawanna,	A car on which he was standing jumped the track, throwing him off and in front of a trip.
	24	William J. Williams,	American,	Driver,	16	S.	Marvine,	Lackawanna,	Car run over his foot.
	24	John Mehalitch,	Austrian,	Door boy,	15	S.	Sterrick Creek,	Lackawanna,	Door post struck by cars and displaced, and in falling struck the boy and his leg was broken.

TABLE V—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
24	Edward Stratford, ...	Welsh, ...	Miner, ...	25	M.	Clinton, ...	Lackawanna,	Coal fell and crushed his leg so that amputation was necessary.
25	Peter Gaughan, ...	American, ...	Driver boss,...	28	M.	Sterrick Creek, ...	Lackawanna,	Injured by fall of rock.
29	Peter Farrell, ...	American, ...	Driver, ...	18	S.	Johnsons, ...	Lackawanna,	A car passed over him crushing his arm.
July 8	James Dacey, ...	Irish, ...	Runner, ...	20	S.	Ontario, ...	Lackawanna,	Head cut by a fall of rock.
12	Lazarus Surnail, ...	Italian, ...	Laborer, ...	24	S.	Riverside, ...	Lackawanna,	Severely injured by a runaway car.
23	William Maliski, ...	Pole, ...	Slate picker,...	14	S.	Clifford, ...	Susquehanna,	Leg fractured by falling into coal pocket.
24	Corin Metush, ...	Slav, ...	Laborer, ...	37	M.	No. 1, ...	Lackawanna,	Matush walked into a small body of gas with a naked light, in a place where the fire boss had not examined, and exploded it. He was burned on hands and face, while Hamminick was injured by the concussion and after damp.
24	Joseph Hamminick, ...	Slav, ...	Miner, ...	32	M.	No. 1, ...	Lackawanna,	
26	James McGinty, ...	American, ...	Door boy,......	15	S.	Clinton, ...	Lackawanna,	A car jumped the track and displaced a prop, which struck him, fracturing his skull.
Aug. 3	John Moore, ...	Slav, ...	Runner, ...	23	S.	Sterrick Creek, ...	Lackawanna,	While riding on a car, another bumped it and knocked him off in front of the second, which ran over his arm, cutting it off.
5	Jacob Gernchuck, ...	Hungarian, ...	Miner, ...	38	M.	Dolph, ...	Lackawanna,	Leg fractured by a piece of coal thrown from a blast.
5	Andrew Spiler, ...	Hungarian, ...	Miner, ...	30	M.	Pancoast, ...	Lackawanna,	While clearing a place to re-stand a prop which had been dislodged by a recent blast, a slab of rock fell and fractured his hip.
5	Sylvester Mezeleroski....	Pole, ...	Laborer, ...	25	S.	Storrs No. 2, ...	Lackawanna,	Back injured by a fall of rock.
6	James Fay, ...	Irish, ...	Miner, ...	36	M.	Storrs No. 3, ...	Lackawanna,	Cut on arm and body by coal from a premature blast.

	8	Andy Perri,	Italian,	Laborer,	40	M.	Coal Brook,	Lackawanna,	Fell from a car and his leg was broken.
	10	Frank Mecon,	Pole,	Driver,	16	S.	Pancoast,	Lackawanna,	Fell in front of car, which ran over his arm.
	13	Benjamin Hodgson,	English,	Runner,	16	S.	Pancoast,	Lackawanna,	Ribs fractured; kicked by a mule.
	14	Frank Krunchock,	Slav,	Laborer,	28	S.	Johnsons,	Lackawanna,	While loading a car a "bell" rock fell on him, fracturing his leg.
	19	Richard Johnkofski,	Pole,	Laborer,	40	S.	Richmond No. 3,	Lackawanna,	Back injured by a fall of rock.
	19	George Bearish,	Hungarian,	Slate picker,	12	S.	Ontario,	Lackawanna,	Foot injured by a pinion wheel while playing in a breaker.
	19	James Barbour,	Irish,	Miner,	41	M.	Erie,	Lackawanna,	Rock fell and cut his scalp.
	20	Michael Neary,	Irish,	Miner,	33	M.	Gipsy Grove,	Lackawanna,	Ankle injured by coal from a blast.
	24	Adam Chips,	Pole,	Laborer,	22	S.	Storrs No. 1,	Lackawanna,	Face lacerated and eyes injured by the explosion of a cap with which he was playing.
	29	Steve Kolish,	Pole,	Laborer,	38	M.	Mt. Jessup,	Lackawanna,	Leg fractured by a fall of rock.
Sept.	10	P. J. Hennigan,	American,	Miner,	55	M.	White Oak,	Lackawanna,	Hips injured by a fall of coal.
	11	Steve Yerniski,	Pole,	Miner,	28	M.	Johnsons,	Lackawanna,	Blast exploded and fractured his skull.
	13	Frank Gunner,	Irish,	Miner,	38	M.	Gipsy Grove,	Lackawanna,	Head and body injured by a fall of rock.
	17	Peter Kearney,	American,	Driver,	15	S.	Raymond,	Lackawanna,	While sitting on bumper of a car sliding foot along the rail, his foot caught, throwing him under car, which passed over his leg, crushing it so badly that amputation was necessary.
	18	Henry McMahon,	American,	Laborer,	19	S.	Richmond No. 3,	Lackawanna,	Fall of rock crushed his arm.
	21	Jacob Grezenda,	Pole,	Miner,	32	M.	Storrs No. 2,	Lackawanna,	Face and arm burned by an explosion of powder, which occurred while he was trying to force it to the back of a hole with a drill.
	21	John Doherty,	American,	Runner,	24	S.	Johnsons,	Lackawanna,	Leg crushed by a car which ran off the track against him.
	26	Mike Bardanko,	Austrian,	Miner,	44	M.	Mt. Jessup,	Lackawanna,	After trimming down all the rock which he thought loose, another piece which he failed to detect fell on him and broke his leg.
Oct.	1	John McGlaughlin,	American,	Driver,	18	S.	No. 1 slope,	Lackawanna,	Severely injured between the roof of the gangway and the coal on the car.
	1	Wilson Bridges,	English,	Miner,	30	M.	Pancoast,	Lackawanna,	A seam in the roof was uncovered by a blast, and on returning to the face he put his lamp up to examine it, when a strong "feeder" of gas issuing from it ignited and burned him.
	7	Owefrey Lawrey,	Austrian,	Miner,	35	M.	Keystone,	Lackawanna,	Coal fell on him and broke his leg.
	18	Peter Pewkoski,	Pole,	Laborer,	32	M.	Storrs No. 1,	Lackawanna,	A large piece of coal fell and rolled against his leg and broke it.

TABLE V—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Nov. 1	James Grady,	Irish,	Fire boss,	60	M.	Leggetts Creek,	Lackawanna,	Both these men were burned on face and hands by an explosion of a small body of gas in old works. Grady was on a tour of inspection of old works which served as return airways. He took Davis with him, and had proceeded a considerable distance when the gas was encountered and exploded by naked lights which they carried. Grady had been fire boss in this mine for many years, and had made hundreds of tours through this section with a safety lamp, and was known to be a very careful and competent fire boss, but for several years had not detected any gas and from this, it is supposed, had grown confident there was none, and on this day, although told by the mine foreman to take a safety lamp, he did not do so, and was caught by the subtle enemy and severely injured.
1	John Davis,	Welsh,	Brattice man,	24	S.	Leggetts Creek,	Lackawanna,	
4	Edward Glynn,	American,	Motor boy,	16	S.	Coal Brook,	Lackawanna,	Fell when running along side of motor and his leg was broken.
5	William Flanagan,	Irish,	Foot man,	33	S.	Jermyn,	Lackawanna,	Tried to uncouple cars while they were in motion and was squeezed between them.
11	Joseph Fossold,	German,	Miner,	62	M.	Riverside,	Lackawanna,	Fall of coal injured him.
11	Rees Jones,	American,	Miner,	33	M.	Storrs No. 1,	Lackawanna,	A slab of rock fell, fracturing his collar bone and ribs.

	11	Michael Muldoon,	Irish,	Miner,	67	M.	Jermyn No. 1,	Lackawanna,	While Muldoon was "working out" some loose coal at face of chamber a fall of rock occurred and injured them.
	11	Geo. Baker,	American,	Miner,	27	S.	Jermyn No. 1,	Lackawanna,	
	11	Ant. Rusnick,	Hungarian,	Laborer,	25	M.	Jermyn No. 1,	Lackawanna,	
	13	Charles Gowaldo,	Pole,	Laborer,	22	S.	Pancoast,	Lackawanna,	Face and hands burned by an explosion of gas.
	15	Jacob Coniack,	Russian,	Laborer,	25	S.	Jermyn,	Lackawanna,	While walking up a plane, he stepped out of the way of one trip in the way of the other, and was severely bruised.
	20	Harry Cowles,	Welsh,	Miner,	40	M.	Leggetts Creek,	Lackawanna,	While preparing powder for a blast, he placed his lamp on his "box," and in handling the powder some of it fell on the flame, and this ignited that which he had in his hands, burning them and his face very severely.
	20	Walter Rolls,	American,	Head man,	16	S.	Mt. Jessup,	Lackawanna,	Hand crushed while spragging a car.
	22	Frank Scott,	American,	Driver,	15	S.	Coal Brook,	Lackawanna,	While trying to block a car with a sprag, it ran over his hand.
	25	Pat. Murphey,	Irish,	Miner,	52	S.	Gipsy Grove,	Lackawanna,	Explosion of blast.
	25	Mike Pituh,	Slav,	Oiler,	31	M.	Forest City,	Susquehanna,	Foot crushed by slipping into machinery.
	27	Envis Ballassi,	Hungarian,	Laborer,	18	S.	Storrs No. 2,	Lackawanna,	Injured by fall of rock.
Dec.	7	Peter Marley,	Irish,	Laborer,	50	M.	Coal Brook,	Lackawanna,	Leg squeezed between cars.
	10	Frank Petroski,	Pole,	Miner,	35	M.	Ontario,	Lackawanna,	While drilling a hole at face of chamber a piece of rock fell and his arm was broken.
	12	Walter White,	American,	Miner,	38	M.	Marvine,	Lackawanna,	Skull fractured by explosion of blast.
	13	William Priestly,	Irish,	Driver,	15	S.	Coal Brook,	Lackawanna,	Injured by cars.
	19	John Onoskavich,	Slav,	Miner,	40	M.	Johnsons,	Lackawanna,	Explosion of powder while he was trying to force it to the back of a hole with a drill.
	26	Pat. H. Collins,	Irish,	Engineer,	55	M.	Jermyn,	Lackawanna,	While oiling conveyors, he fell and fractured his collar bone.
	28	John Golden,	American,	Driver,	17	S.	No. 1,	Lackawanna,	Squeezed between car and "rib."

Second Anthracite District.

LACKAWANNA COUNTY.

Scranton, Pa., February 17, 1902.

Hon. James W. Latta, Secretary of Internal Affairs, Harrisburg, Pa.:

Sir: I have the honor of presenting my report as Inspector of Mines for the Second Anthracite District for the year 1901, as required by section 9, article 2, anthracite mine law 1891, etc. It contains the usual statistics, with some additions. The accidents which occurred in the district during the year are in tabulated form.

Respectfully submitted,

H. O. PRYTHERCH,
Inspector.

TABLE A—Prouction of Coal in Tons, 1901.

Name of Company.	Tons.
Delaware, Lackawanna and Western Railroad Company,	4,271,501
Austin Coal Company,	18,892
Delaware and Hudson Company,	598,273
The Hudson Coal Company,	191,626
Scranton Coal Company,	1,182,540
Green Ridge Coal Company,	169,889
Pennsylvania Coal Company,	396,719
William Connell & Company,	134,649
Connell Coal Company,	384,524
John and Joseph J. Jermyn,	456,476
Elliott McClure & Company,	207,322
A. D. & F. M. Spencer,	102,669
Nay Aug Coal Company,	56,406
Gibbons Coal Company,	19,230
North American Coal Company,	237,321
Bowen Coal Company,	10,233
Bulls Head Coal Company,	29,128
Carbon Coal Company,	18,474
People's Coal Company,	152,543
Spring Brook Coal Company,	35,645
Total,	8,674,060
The total production was made up as follows:	
Shipped by railroad to market,	7,938,312
Sold at mines for local use,	527,223
Consumed to generate steam, etc.,	208,525
Total,	8,674,060

TABLE B—Number of Fatal Accidents and Tons of Coal Produced for Each Accident.

Names of Companies.	Number of fatal accidents.	Number of tons of coal produced per life lost.
Delaware, Lackawanna and Western Railroad Company,	27	158.203
Austin Coal Company,	....	18.892
Delaware and Hudson Company,	3	199,424
The Hudson Coal Company,	3	63,875
Scranton Coal Company,	11	107.503
Green Ridge Coal Company,	2	84,944
Pennsylvania Coal Company,	3	132.239
Wm. Connell and Company,	1	134,649
Connell Coal Company,	2	192,262
John and Joseph J. Jermyn,	3	152,158
Elliott, McClure & Company,	3	69,107
A. D. & F. M. Spencer,	....	102,669
Nay Aug Coal Company,	2	28,203
Gibbons Coal Company,	....	19.230
North American Coal Company,	....	237,321
Bowen Coal Company,	....	10,233
Bulls Head Coal Company,	1	29,128
Carbon Coal Company,	....	18,474
People's Coal Company,	2	76,271
Spring Brook Coal Company,	....	35,645
Total and average,	63	137,683

TABLE C—Showing the Number of Fatal and Non-Fatal accidents and the Number of Tons of Coal Produced per Accident.

Names of Companies.	Number of accidents.	Number of tons of coal produced per accident.
Delaware, Lackawanna and Western Railroad Company,	123	33,914
Austin Coal Company,	....	18.892
Delaware and Hudson Company,	12	41,523
The Hudson Coal Company,	12	15,969
Scranton Coal Company,	43	27.501
Green Ridge Coal Company,	3	56,629
Pennsylvania Coal Company,	10	39.672
William Connell & Company,	2	67,324
Connell Coal Company,	7	54,932
John and Joseph J. Jermyn,	9	50,718
Elliott, McClure & Company,	7	29,618
A. D. & F. M. Spencer,	2	51,335
Nay Aug Coal Company,	4	14,101
Gibbons Coal Company,	1	19.230
North American Coal Company,	1	237,321
Bowen Coal Company,	....	10,233
Bulls Head Coal Company,	1	29,128
Carbon Coal Company,	....	18.474
People's Coal Company,	6	25.424
Spring Brook Coal Company,	6	5,940
Total and average,	249	34,876

TABLE D—Classification of Accidents.

	Killed or fatally injured.	Percentage.	Injured.	Percentage.	Total accidents.	Percentage.
Falls of roof and coal,	30	47.6	71	38.2	101	40.6
Explosions of gas,	3	4.8	15	8.1	18	7.2
Explosions of blasts,	5	7.9	20	10.8	25	10.0
Mules,	....	....	1	.5	1	.4
Cars, inside,	11	17.5	46	24.7	57	22.9
Cars, outside,	6	9.5	9	4.8	15	6.0
Falling down shafts,	4	6.3	....	....	4	1.6
Breaker machinery,	2	3.2	7	3.8	9	3.6
Miscellaneous, inside,	2	3.2	11	5.9	13	5.2
Miscellaneous, outside,	....	....	6	3.2	6	2.5
Total,	63	100	186	100	249	100

TABLE E—Occupations of Persons Killed and Injured.

	Killed or fatally injured.	Percentage.	Injured.	Percentage.	Total accidents.	Percentage.
Miners,	26	41.3	62	33.3	88	35.3
Laborers,	16	25.4	44	23.6	60	24.1
Door boys,	1	1.6	10	5.4	11	4.4
Drivers,	8	12.7	24	12.9	32	12.9
Laborers, outside,	7	11.1	16	8.6	23	9.2
Company men, inside,	3	4.8	3	1.6	6	2.4
Footmen,	1	1.6	3	2.1	4	1.6
Pumpmen,	....	....	1	.5	1	.4
Fire bosses,	....	....	1	.5	1	.4
Runners,	....	....	10	5.3	10	4.0
Slate pickers,	1	1.6	6	3.2	7	2.8
Driver bosses,	....	....	2	1.1	2	.8
Mine foremen,	....	....	2	1.1	2	.8
Mechanics,	....	....	2	1.1	2	.8
Total,	63	100+	186	100+	249	100—

TABLE F—Nationalities of Persons Killed and Injured.

	Welsh.	English.	Scotch.	Irish.	Poles.	Slavs.	Americans.	Hungarians.	Italians.	Germans.	Lithuanians.	Greeks.	French.	Austrians.	Total.
Killed,	6	3	1	18	15	1	7	2	3	3	2	....	1	1	63
Injured,	26	13	1	34	41	3	47	1	7	10	2	1	....	....	186
Total,	32	16	2	52	56	4	54	3	10	13	4	1	1	1	249

Table showing the condition of the ventilation of the Second Anthracite District during December, 1901.

Names of Mines.	Names of Operators.	Number of fans.	Diameter of fans—feet.	Number of splits of air.	Number of persons on splits.	Cubic feet of air in inlet.	Cubic feet of air at face of workings.	Cubic feet of air at outlet.
Archbald,	Delaware, Lackawanna and Western R. R. Co.,	1	16	7	290	146,560	132,350	150,090
Bellevue shaft,	Delaware, Lackawanna and Western R. R. Co.,	2	16, 14	14	459	214,019	136,872	249,474
Bellevue slope,	Delaware, Lackawanna and Western R. R. Co.,	1	12	2	33	48,840	30,865	51,785
Brisbin,	Delaware, Lackawanna and Western R. R. Co.,	1	14	8	328	143,080	121,290	167,002
Cayuga,	Delaware, Lackawanna and Western R. R. Co.,	1	12	10	359	138,000	106,250	120,200
Sloan,	Delaware, Lackawanna and Western R. R. Co.,	1	12	5	161	54,525	49,610	72,205
Central,	Delaware, Lackawanna and Western R. R. Co.,	1	14	9	178	104,820	67,975	110,200
Continental,	Delaware, Lackawanna and Western R. R. Co.,	1	14	8	272	123,173	96,515	114,673
Dodge,	Delaware, Lackawanna and Western R. R. Co.,	1	16	8	310	141,455	105,420	178,000
Diamond and Tripp shafts,	Delaware, Lackawanna and Western R. R. Co.,	3	14, 14, 16	8	232	218,240	193,570	229,560
Tripp slope,	Delaware Lackawanna and Western R. R. Co.,	1	14	3	144	55,400	40,400	60,000
Tripp drift,	Delaware, Lackawanna and Western R. R. Co.,	1	16	3	103	42,500	26,400	50,000
Hyde Park,	Delaware, Lackawanna and Western R. R. Co.,	1	14	6	296	111,926	96,486	104,182
Manville,	Delaware and Hudson Company,	2	20, 20	11	324	173,240	145,674	190,830
Holden,	Delaware, Lackawanna and Western R. R. Co.,*	....	....	....	....	....	....	....
Hampton,	Delaware, Lackawanna and Western R. R. Co.,	1	12	4	169	89,565	83,587	92,104
Pyne,	Delaware, Lackawanna and Western R. R. Co.,	1	14	10	422	142,188	132,185	144,875
Taylor shaft and drift,	Delaware, Lackawanna and Western R. R. Co.,	1	14	9	305	125,285	112,305	138,242
Austin tunnel,	Austin Coal Company,	1	12	3	48	45,080	28,200	48,800
Dickson,	Delaware and Hudson Company,	3	20, 20, 20	12	448	285,000	213,100	303,900
Von Storch,	Delaware and Hudson Company,	1	22	10	307	155,930	181,120	187,200
Pine Brook,	Scranton Coal Company,	2	17, 17	9	378	143,180	120,240	152,890
Capouse,	Scranton Coal Company,	2	20, 18	8	294	124,000	123,000	140,000
Mount Pleasant,	Scranton Coal Company,	2	20, 15	10	304	121,810	110,040	126,950
West Ridge,	Scranton Coal Company,	1	20	5	146	90,080	66,900	98,900
No. 5 shaft,	Pennsylvania Coal Company,	1	20	7	298	159,213	99,058	247,216
Old Forge No. 1,	Pennsylvania Coal Company,	1	20	7	190	101,120	90,600	113,060
Old Forge No. 2,	Pennsylvania Coal Company,	1	20	5	209	84,544	74,746	123,340
Old Forge slope,	Pennsylvania Coal Company,	1	17	2	87	46,350	41,710	46,980
No. 4 tunnel,	William Connell & Company,	1	14	4	146	48,350	45,932	50,550
National,	William Connell & Company,	1	14	3	118	58,910	54,328	64,900
William A,	Connell Coal Company,	1	18	5	219	88,500	76,700	97,100

Lawrence shaft and drifts, ...	Connell Coal Company, ...	1	16	4	104	119,760	113,940	61,500
Greenwood, New, No. 1, ...	The Hudson Coal Company, ...	1	17	3	111	39,460	35,700	42,900
Greenwood, Old, No. 1, ...	The Hudson Coal Company, ...	Nat. vent.	....	2	85	29,600	27,650	31,650
Greenwood, New connecting vein,	The Hudson Coal Company, ...	Nat. vent.	....	1	15	6,500	5,300	8,500
Greenwood No. 12 drift, ...	The Hudson Coal Company, ...	Furnace..	....	1	56	14,500	13,600	15,400
Greenwood No. 8 drift, ...	The Hudson Coal Company, ...	Furnace..	....	1	64	18,560	17,550	19,660
Greenwood No. 5 drift, ...	The Hudson Coal Company, ...	Nat. vent.	....	1	10	11,600	10,100	11,540
Greenwood No. 13 drift, ...	The Hudson Coal Company, ...	Furnace..	....	1	10	5,000	4,500	6,000
Greenwood No. 2 shaft, ...	The Hudson Coal Company, ...	1	17	3	104	40,920	38,260	42,130
Greenwood drift, ...	The Hudson Coal Company, ...	Nat. vent.	....	1	47	12,600	12,000	12,960
Green Ridge, ...	Green Ridge Coal Company,*	....	....	....	....	....	....	....
Jermyn No. 1 and 3, ...	John and Joseph J. Jermyn, ...	2	14, 18	8	421	109,085	105,127	114,075
Jermyn No. 2, ...	John and Joseph J. Jermyn, ...	1	18	8	335	89,771	79,411	92,969
Sibley, ...	Elliott, McClure & Company, ...	1	14	3	172	59,000	46,150	60,700
Spencer, ...	A. D. and F. M. Spencer, ...	1	14	6	123	79,470	69,865	84,635
Nay Aug slope, ...	Nay Aug Coal Company, ...	1	12	2	53	34,200	10,200	24,300
Bulls Head slope, ...	Bulls Head Coal Company, ...	Nat. vent.	....	4	51	26,000	28,000	31,000
Oxford shaft, ...	People's Coal Company, ...	1	16	5	245	64,000	59,000	79,500
Spring Brook, ...	Spring Brook Coal Company,*	....	....	....	....	....	....	....

*Not operating on December, 1901.

Remarks.

In the tabulation of accidents for the year 1901, I have adhered to the same classification as in past years, with the addition of a percentage column to Tables D and E. For instance, in the Table D which gives the classification of accidents in fatal and non-fatal—as to their causes—"falls of roof," "explosions of gas," etc., etc., the percentages have been figured out and are given in a column following that in which the number of fatal, non-fatal, and total accidents are given, thus: "Falls of roof and coal" are responsible for thirty fatal accidents, which is 47.6 per cent. of the total number of fatal accidents; seventy-one non-fatal accidents, which is 38.2 per cent. of the total number of non-fatal accidents, and 101 accidents fatal and non-fatal, which is equal to 40.6 per cent. of the whole accidents for the year. This explanation of Table D will also explain Table E, in which the accidents are classified in a similar manner, but having reference to the occupations of the persons killed or injured. In this form the results in the several years are made more comparable.

Comparison.

Year.	Fatal.	Non-fatal.	Total accidents.
1900,	55	150	207
1901,	63	186	249

Thus in 1901 there is an increase of eight fatal and thirty-four non-fatal accidents. When the number of accidents is taken into account, the results obtained in 1901 are much less favorable than those of 1900.

In order to arrive at a fair and judicious comparison of the work accomplished in the two years named, the number of days worked in each, the total production of coal in each year must be considered.

In the year 1900, there was a total production of 6,429,112 tons of coal which was 116,891 tons for each life lost, and 31,058 tons for each accident.

In the year 1901, 8,674,060 tons of coal were produced, which was 137,683 tons for each life lost, and 34,876 tons for each accident.

Thus it will be seen that 20,792 tons more coal was produced per life lost, and 3,818 tons more coal per accident in 1901 than in 1900. So it is fair to conclude that mining in this district has resulted in fewer casualties in proportion to the work done in 1901, than in 1900.

Inasmuch as it is desirable to reduce the number of accidents to a minimum, I will endeavor to trace the increased number of accidents to the causes from which they occurred. It is a remarkable fact that not a single accident occurred during the year by which more than one life was lost. In former years when an increase in the number of accidents was reached, it had been explained in most instances by the occurrence of extraordinary accidents by which a number of lives had been lost at one time. Particularly is this true of the district in the year 1897, which will be seen by reference to the report for that year.

With reference to the increase in the number of non-fatal accidents, it is noticeable that mine officials have shown a tendency to report the slightest injuries, for reasons which are known to themselves.

The law requires accidents resulting in the death or serious injuries of persons, only to be reported. Article 14, section 1, anthracite mine law, 1891. During the year a number, probably equal to the increase under this head have been reported, which were not serious by any means, and therefore should not have been returned to this office. All accidents reported from the mines of the district are placed on record in the annual report indiscriminately.

If Table E for 1900 and 1901 be compared, it will be noticed that the increase in the fatal column affects the outside laborers more than those of any other occupation. In this item an increase of five is recorded. I cannot fail to invite attention to the fact that the conditions affecting the safety of this class of workmen are practically stationary, more so than any other in or about the mines. The handling of railroad cars from a point above the breaker, to the breaker loading the same, and passing them over the scale, is perhaps attended with as little danger as any work to be performed in the mining and preparing of coal for market, still under this head there is a marked increase in the number of fatalities. The work of handling cars outside with the help of daylight and unlimited space is comparatively easy and safe, as compared with the work of handling cars inside the mine by the help of artificial light and limited space, with other sources of danger which are not present outside. The same conclusions are forced upon us when we compare the safety of the conditions surrounding persons doing general work outside and inside the mine.

Another fact bearing upon this ubject and which cannot be overlooked, is that cars inside are handled by the help of mules driven by boys, while the cars outside which are responsible for the increase, are run slowly by gravity, and under the control of men of mature years; and for every car moved a short distance outside, a large number of cars are moved inside the mine for long distances. The attention of the outside foremen and superintendents of the district are particularly invited to this matter with the view of emphasizing the necessity of employing men who are known to be competent and careful to do this class of work, and thus help to reduce the number of accidents.

Probably on account of the safety of the work, too little care in the selection of persons to perform it has been exercised in the past, and thus the proportion of fatalities is increased.

Objects of the Mine Law of 1891.

Inasmuch as the principal object of the mine law of 1891 is to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith, I propose to confine my remarks in the remainder of this report to those points.

In regard to the property connected with the industry of coal mining in the district, little destruction is to be reported for the year. The Green Ridge Coal Company's breaker, formerly located on Washington avenue, in the city of Scranton, was completely destroyed by fire on December 2, 1901. The work of rebuilding a new structure on the old site is now progressing. Apart from this instance there was no other destruction of property.

The health and safety of the persons employed in and about the mines deserves particular attention. This topic has been the subject of the reports of the several mine Inspectors of the State since the enactment of the first law relating to mining, and it is difficult to conceive of any phase of the subject, but that it has received more than a passing remark. Inasmuch as the health and safety of persons working in the mines continue to be affected by the same foes year after year, it is only natural that the same features crop up in the annual reports of the region.

In full view of the results of the year's labors, I fail to see that any revolutionary measures can be suggested as a prevention of accidents in the future. They are not the result of any new methods of mining that have been adopted; neither are they the result of clinging to old or antiquated methods. The manner in which each class performs its particular duty, and the precautions against danger continually employed, are of the greatest importance in this district; and the defects in this direction as revealed by the investigations of the several accidents, will be indicated, and some suggestions made.

Falls of Roof and Coal.

Commencing with the class of accidents which is responsible for the greatest number, namely "falls of roof and coal," thirty lives were lost and seventy-one persons injured, making a total of 101. If the question is asked: "How do these accidents occur?" you would not hesitate to answer by saying that a number of them cannot be foreseen, guarded against, or prevented by ordinary or even extraordinary precautions, because of exceptional conditions, such as the formation of false slips, the existence of "bells" concealed from view in different ways. Still the accidents which would result from these exceptional causes would be small in comparison with the record of this year, if all those which were accompanied by discoverable signs of danger could have been avoided.

Following the accidents of this latter class, my investigations proved clearly that they occur owing to too little vigilance on the part of the miner; in other words, the necessary examinations of the roof before starting to work, and after every blast fired, are either not made with care, or the indications obtained from such examinations are not properly heeded.

Timber Dislodged by Flying Coal from Blasts.

A common occurrence in the blasting of coal is the dislodgement of props and other timbers which are stood for the express purpose of supporting the roof at or near the working "face." When this occurs there is a tendency on the part of the miner to call his laborers to assist him in the work of re-standing the dislodged timber at once, and while they are so engaged, the roof which was formerly supported by the timber, falls, and in most of such cases a fatal accident results.

I cannot suggest any better or more effective precautions against accidents of this class, than the old rule, namely: The roof to be thoroughly examined before commencing work, and after the smoke of every blast has been swept away, any part which is found to be unsafe or even doubtful to be taken down immediately or secured before work is resumed; in the case of dislodged timber sufficient time should be permitted to elapse, for any fall of roof which might follow the removal of the timber, to take place, before men commence work at the face. I am well aware that every miner will acknowledge the reasonableness of these simple precautions, and furthermore, they are well known. Why is it so difficult to enforce a strict compliance with such simple precautions? The miner alone can answer the question.

Cars Inside.

The next cause of mine accidents to falls of roof and coal in order of importance is by "cars inside." The greater number of these accidents is the result of drivers persisting in riding on the bumpers of cars while they are in motion, and sliding one foot on the rail, sometimes to hold the car back while descending slight down-grades, and at other times as the force of habit. Any irregularity in the rail on which the foot is sliding, such as a "bad" joint, etc., results in the driver being thrown under the moving train. The derailing of trains of mine cars, the attempt on the part of the driver or miner to pass moving cars on the narrow side of the road, all assist to swell the number of casualties from this cause. I have no remedy to offer which promises as much protection to the younger persons employed in the mines, as the providing of good tracks kept well drained and cleaned, with all the space possible reserved on both sides of the road, and wide doors, with a rule strictly enforced which would prohibit all persons from riding on the bumpers of cars. During 1901, eleven persons were killed and forty-six injured by cars inside. I therefore feel justified in calling particular attention to the manner in which the accidents occur, as well as to the remedy suggested as a means tending to reduce the number in future.

Explosions of Blasts.

Five persons were killed and twenty injured by blasts. The total number of accidents from this source is the same as that for the preceding year with the difference that there is an increase of four of those which terminated fatally. The practice of preparing two or more blasts in the same place and firing more than one at the same time is a dangerous one. The practice of preparing blasts in adjoining places and firing them at the same time should be avoided. It frequently happens that when blasts are prepared in adjoining places, the miners retreating to the same place of safety at some distance from the "face," when one shot explodes some time before the other, a mistake is made as to which shot has exploded; when the miner who claims that his blast has "gone off" is returning to see the result, he is met by the flying coal, and discovers that his neighbor's blast was the first to explode. If he has reached a point close to the site of the charge, a fatality is the result.

It should also be stated that the injudicious handling of powder and high explosives in charging blasts has also added its quota to the list. The shortening of squibs resulting in premature blasts has not been so noticeable of late. The tendency to return to the "face" on the supposition that the shot has "missed" has lured many an experienced miner to a dangerous situation with serious consequences. The several defects pointed out suggest plainly the remedies to be applied.

Explosions of Gas.

The fatalities from explosions of gas in the district during the year have resulted in most cases from the victims passing over danger marks properly erected to warn them to keep away. It is a violation of the provision of the mine law, see General Rule 25.

"Any person or persons who shall knowingly or wilfully * * * enter a place in or about a mine against caution * * * shall be guilty of an offence against this act."

Those who so violated in this respect paid the penalty with their lives. The greater number of the non-fatal accidents from explosions of gas can be explained only by the fact that boys who are allowed to attend doors which control the air currents are prone to leave their posts to run around after mules with the drivers, leaving the doors open in the meantime, which results in the air current being diverted from some important point, probably the face of an advancing gangway, where an explosive accumulation takes place and an explosion and an accident follow. Some of the foremen appeared until lately to treat this matter lightly, and had no stringent measures in force to remedy the evil. Very important doors in the mine should be in charge of older men, who would better realize the importance of proper attention to their simple duties.

Another matter which is entirely under the control of the higher officials of the mines should be mentioned in this connection, and which has added to the list of accidents from explosions of gas. When contracts for rockwork to be done in the mines are let to outside parties, and for which dynamite is to be used, a limit should be inserted in the contract as to the charges to be fired at one time. It will be understood that I am calling attention to cases in which contract work in rock is being executed in fiery mines in actual operation. The explosion of heavy charges of high explosives is known to shatter important wall stoppings, doors, shaft brattice, and overcast air bridges, some of which are located in out-of-the-way situations, resulting in diverting the air currents, the accumulation of explosive mixtures, and finally in an explosion of gas. It is useless to expect the morning examination of the workings by the assistant foreman to act as a safeguard for accidents from this source, as the cause and result are accomplished in a short space of time, and this while the mine is actually working. Contractors are interested in the execution of their own particular work, and not in the general safety of the mine. This is the responsibility which rests on the mine officials and which demands particular attention on their part.

"Falling Down Shafts."

Four deaths have resulted from this source during the year, under the following circumstances:

An alien who had worked in the mines but a few days, on reaching the foot of the shaft after "all over," signalled for the cage. The cage not being lowered at once, it appears probable that the victim attempted to climb the buntons of the shaft, to be met by the descending cage.

In the second case the victim, with others, was engaged taking off pipes which were lowered by the use of a rope in a supply shaft, and undertook to ascend the shaft by standing on a stick pushed through the main link of the chain at the end of the rope. He fell and was instantly killed. The main shaft with cages properly equipped, and but 200 feet distant, was at the disposal and use of the victim.

In the third case, in the morning a cage was loaded with ten men ready to descend. After the signal to lower had been given to the engineer, one of the ten men stepped out of the cage and was struck by the bonnet of the cage, which caused him to fall into the shaft.

In the fourth case the work of changing a cage at a hoisting shaft was being done. A platform had been placed over the mouth of the shaft, but by some oversight the platform collapsed, precipitating one man into the shaft.

If ordinary judgment had been exercised by the victims in the three first cases it would not be my duty at this time to call attention to the circumstances attending their deaths. Notice is made of these at length, to warn others not to take such risks in future.

The lesson taught by the fourth case is that, in all cases in which cages are to be changed in shafts, and also when any work is to be done in shafts, requiring the use of a platform, the greatest care is to be exercised in its construction, and as an extra precaution against accidents, double platforms should be provided, that is, one platform a few feet below the other.

The greater number of the accidents covered by this report are attributed to the causes which I have briefly described, and when it is considered that sixty-three lives were lost, and 186 persons injured, even if the result is more gratifying than that of the preceding year, when the tonnage is taken into account, the fact remains, that much loss and suffering is inflicted on the underground worker, and if I am permitted to say as the result of the experience gained in the work of inspecting the mines and investigating the accidents of the year, I am more than ever of the opinion that the most effective preventative against their occurrence would be a combined effort on the part of all concerned, and this combined effort on the part of all would be made up of precautions that appear small in themselves, precautions that would incur no greater expense, nor more work—simply a habit of being conscious of the possibility of danger lurking in the vicinity, the application of known means to discover it in due time, to be immediately followed by means calculated to preserve life and limb. I have already pointed out some of those which appear important. If I succeed in attracting the joint attention of mine officials and working men to this very important subject, and to enlist their joint co-operation, much good can be accomplished.

Few if any of the accidents of the year have taken place owing to non-compliance with the law, on the part of the operators, as the inquests held on such as appeared accompanied by some suspicious circumstances failed to establish the fact.

Fires in Breakers Located Over Shafts.

While the mine law of 1891 provides for a specified distance to be maintained between the breaker and the shaft or slope, there are still a number of breakers in the district that were erected before the present law was enacted, which are located over the opening. In the report for the year 1897, attention was called to the necessity then evident, of planning a course of action in case of a fire in the breaker situated over the opening connecting the surface with the underground workings. I invite the attention of superintendents and other mine officials to this subject again. The matter has been commented upon during my inspections, and while precautions have been taken in many instances, these are not general. While no accident has occurred during the year from this cause, I feel justified in recommending to the operators that a well defined plan be adopted, and a sufficient number of persons made acquainted with the detail of its manipulations, so that the persons employed inside may be immediately withdrawn along safe avenues in case of a destructive fire in the breaker.

By the adoption of these recommendations the double object of the mine law will to some extent be accomplished.

Condition of the Mines.

The general condition of the mines of the district will compare favorably with their conditions at the time the report for 1900 was made. The workings in the developed veins are continually being extended, as the total production for the year indicates, and in addition other veins are being developed. Thus the extent of the territory to be guarded and ventilated is increasing from year to year. A table has been prepared from the monthly report of air measurements, which shows the condition of ventilation in all the mines in the district. In this table the type of ventilator in use is given, its dimensions, the number of splits of air, the total number of persons regularly employed on the splits, with the quantity of air in cubic feet in the inlet, face of workings, and in the outlet, and which will show that the ventilation of the mines as a whole is good.

The New Law and the Manner in which its Provisions are Respected.

On November 29, 1901, "An act relating to Anthracite mines and providing for the care and life, and attention of employes injured in and about said mines," and known as No. 212, became effective. During the remainder of the year my particular attention was directed to the several operators, to ascertain the manner in which they would comply with the provisions of the new law. With this object in view, and in order that the subject should be covered in this report, a strenuous effort was made to visit as many of the mines as possible. Forty mines were visited, and in five cases only had the hospital or medical room in the mine not been commenced. The excuse offered for not having already complied with the requirements of the law, was the difficulty attending the selection of the most convenient location in mines in which a number of veins are being worked and where the workings are much scattered. The superintenden in each of these cases was urged to proceed with the work at once or suffer the penalty imposed by the law. By this time the work has been reported in most of the cases. In the other mines—thirty-five in number—the medical room was provided, equipped and in working order. The list of supplies to be provided as set forth in section one of the act, is supplemented with others, which makes the list more complete to meet the varied cases that will need treatment.

In connection with the medical rooms, a number of operators have secured the services of a competent surgeon to instruct the foremen at the mines as to the treatment to be administered by them, as well as on general ambulance work, the foremen being required to instruct their assistants and other persons employed in the mines under their charge in the same manner. Much benefit to the injured is expected to accrue from the adoption of this plan.

A New Departure.

I am pleased to notice that the ambulances used to convey the injured from the mines to their respective homes or the hospital are now being heated by carriage heaters, thus adding to the comfort of the injured. This good and humane provision—which is voluntary—has not as yet become general, but is an indication that the operators are not altogether void of kindly feeling towards their employes. Mr. E. E. Loomis, Superintendent of Mining, Delaware, Lackawanna and Western Railroad Company, introduced the first heaters into mine ambulances.

Other Fatalities.

In addition to the fatalities resulting from accidents which have been regularly tabulated, as required by law, the following list which is attributed to other causes is to be noticed:

On June 5, 1901, David R. Thomas, nineteen years of age, employed as driver in the Archbald mine, received injuries while at work, from which he died. The coroner's jury rendered the following verdict: "Thomas came to his death as a result of a blow received on the head by some blunt instrument in the hands of Tomasafski." Tomasafski has been on trial in the Lackawanna court on the charge.

On September 6, 1901, John Worthington, a laborer, sixty-two years of age, employed in Old Forge No. 2 shaft, died from apoplexy.

On November 29, 1901, George Doyle, a laborer, seventy years of age, employed in the William A. mine, died from natural causes while he was on his way out of the mine.

Mine Foremen's Examination.

The regular annual examination of candidates for foremen's certificates was held in the City Hall, Scranton, Pa., August 19th and 20th, 1901. The following persons were recommended to the Secretary of Internal Affairs, Harrisburg, Pa., to receive mine foremen's certificates: Julian Cooper, Job Whitehouse, Tallie F. Jones, John A. Morgan, Evan C. Davies, C. Grosspictoch and James Regan.

Forty persons were recommended to receive certificates as assistant foremen.

Improvements.

Only a part of the improvements made in the mines of the district have been reported this year.

The Connell Coal Company has remodeled the Lawrence breaker, and constructed an addition, which is equipped with jigs. This plant is to be used for preparing coal from the Babylon colliery of the Temple Iron Company, and also from the Lawrence workings of the Connell Coal Company.

A rock plane was driven at William A. colliery from the Clark to the Marcy vein, a total distance of 140 feet. This is used for letting the Marcy vein coal down to the Clark vein.

The Delaware, Lackawanna and Western Railroad Company reports the following:

The new Hampton boiler plant, installed and practically completed in 1901; consists of thirty boilers or units of 313 H. P. each=4,695 H.

P. at 150 pounds pressure, divided into seven and one-half batteries Babcock & Wilcox vertical headed water tube boilers. They are fitted up with McClave & Brooks Automatic Stokers and self-feeding arrangement for fuel from storage pockets, and also have attached the Green Economizers, divided as follows: One for eight batteries and one for seven and one-half batteries, with induced fan draft in connection with forced fan draft. This plant is all under one roof. The steam pipe connections are as follows: To Sloan shaft 1,420 feet of 8 inch pipe. To Central shaft 1,400 feet of 8 inch pipe. To Hyde Part shaft, 3,140 feet of 8 inch pipe. Tto Hampton Shaft, 1,400 feet of 12 inch pipe. To Continental shaft 1,500 feet of 8 inch pipe. The above plant takes the place of ninety-five boilers, cylinders and locomotives. A new reservoir 100 feet in diameter has also been located near the plant which will hold 500,000 gallons of water.

At Pyne shaft a tail rope system of haulage is being installed. Length of main rope 4,000 feet; size of engines 15 feet x 30 feet geared.

Sloan Mine.—A new air shaft has been sunk to the surface vein and a connection driven from the bottom to the upcast compartment of main shaft. A new ventilating fan will soon be erected over this shaft. The fan which is now ventilating the mine and is located at the breaker over the main shaft will be removed, thus reducing the risk from fire, and at the same time doing away with the possibility of the air—which is being exhausted, entering the downcast again.

New Water Shaft.—A new shaft is being sunk at a point between the Central and Sloan shafts. This shaft is 8′x33′ in the clear, and will be 500 feet deep. It is to be used to drain the mine workings of the company's Keyser Valley collieries. When the work is finished it is proposed to raise 7,000,000 gallons of water every twenty-four hours, by the use of buckets.

An electric motor system of haulage has been installed in the Dodge mine, and a new steam generating plant erected, at a point between the Dodge and Bellevue breakers. This plant will supply steam to the two mines and breakers.

A new ventilating shaft has been sunk at the Taylor mine from the surface to the Clark vein.

In the Manville shaft of the Delaware and Hudson Company and the Delaware, Lackawanna and Western Railroad Company, and the Delaware, Lackawanna and Western Company's Holden shaft, the old cribbing has been removed and replaced by expanding metal. The work was successfully accomplished in each case, and the result is highly satisfactory.

The improvements made in the several mines in the district are of the usual kind, and as important as the condition of the mine required and the increased output demanded.

TABLE I—Showing names of operators, railroads, etc., etc., and location of collieries in the Second Anthracite District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Del., Lack., & West. R. R. Co.						
Archbald,	Lackawanna,	E. E. Loomis,	Scranton,	T. J. Williams,	Scranton,	Del., Lack. & West. R. R.
Bellevue shaft,	Lackawanna,	E. E. Loomis,	Scranton,	E. J. Evans,	Scranton,	Del., Lack. & West. R. R.
Bellevue slope,	Lackawanna,	E. E. Loomis,	Scranton,	E. J. Evans,	Scranton,	Del., Lack. & West. R. R.
Brisbin,	Lackawanna,	E. E. Loomis,	Scranton,	R. A. Phillips,	Scranton,	Del., Lack. & West. R. R.
Cayuga,	Lackawanna,	E. E. Loomis,	Scranton,	R. A. Phillips,	Scranton,	Del., Lack. & West. R. R.
Sloan,	Lackawanna,	E. E. Loomis,	Scranton,	T. J. Williams,	Scranton,	Del., Lack. & West. R. R.
Central,	Lackawanna,	E. E. Loomis,	Scranton,	T. J. Williams,	Scranton,	Del., Lack. & West. R. R.
Continental,	Lackawanna,	E. E. Loomis,	Scranton,	T. J. Williams,	Scranton,	Del., Lack. & West. R. R.
Dodge,	Lackawanna,	E. E. Loomis,	Scranton,	E. J. Evans,	Scranton,	Del., Lack. & West. R. R.
Diamond,	Lackawanna,	E. E. Loomis,	Scranton,	R. A. Phillips,	Scranton,	Del., Lack. & West. R. R.
Tripp shaft,	Lackawanna,	E. E. Loomis,	Scranton,	R. A. Phillips,	Scranton,	Del., Lack. & West. R. R.
Tripp slope,	Lackawanna,	E. E. Loomis,	Scranton,	R. A. Phillips,	Scranton,	Del., Lack. & West. R. R.
Tripp drift,	Lackawanna,	E. E. Loomis,	Scranton,	R. A. Phillips,	Scranton,	Del., Lack. & West. R. R.
Hyde park,	Lackawanna,	E. E. Loomis,	Scranton,	T. J. Williams,	Scranton,	Del., Lack. & West. R. R.
Manville,	Lackawanna,	E. E. Loomis,	Scranton,	R. A. Phillips,	Scranton,	Del., Lack. & West. R. R.
Holden,	Lackawanna,	E. E. Loomis,	Scranton,	E. J. Evans,	Scranton,	Del., Lack. & West. R. R.
Hampton,	Lackawanna,	E. E. Loomis,	Scranton,	T. J. Williams,	Scranton,	Del., Lack. & West. R. R.
Pyne,	Lackawanna,	E. E. Loomis,	Scranton,	T. J. Williams,	Scranton,	Del., Lack. & West. R. R.
Taylor shaft,	Lackawanna,	E. E. Loomis,	Scranton,	E. J. Evans,	Scranton,	Del., Lack. & West. R. R.
Taylor drift,	Lackawanna,	E. E. Loomis,	Scranton,	E. J. Evans,	Scranton,	Del., Lack. & West. R. R.
Washeries—						
Bellevue,	Lackawanna,	E. E. Loomis,	Scranton,	E. J. Evans,	Scranton,	Del., Lack. & West. R. R.
Diamond,	Lackawanna,	E. E. Loomis,	Scranton,	R. A. Phillips,	Scranton,	Del., Lack. & West. R. R.
Hampton,	Lackawanna,	E. E. Loomis,	Scranton,	T. J. Williams,	Scranton,	Del., Lack. & West. R. R.
Oxford,	Lackawanna,	E. E. Loomis,	Scranton,	E. J. Evans,	Scranton,	Del., Lack. & West. R. R.
Austin Coal Co.						
Austin tunnel,	Lackawanna,	W. G. Robertson,	Scranton,	John H. Robertson,	Old Forge,	Lehigh Valley R. R.
Delaware and Hudson Co.						
Manville,	Lackawanna,	C. C. Rose,	Scranton,	Finley Ross,	Scranton,	Delaware & Hudson R. R.
Dickson,	Lackawanna,	C. C. Rose,	Scranton,	Finley Ross,	Scranton,	Delaware & Hudson R. R.
Von Stroch shaft,	Lackawanna,	C. C. Rose,	Scranton,	Finley Ross,	Scranton,	Delaware & Hudson R. R.
Von Stroch slope,	Lackawanna,	C. C. Rose,	Scranton,	Finley Ross,	Scranton,	Delaware & Hudson R. R.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
The Hudson Coal Co.						
No. 1 Greenwood:						
Old No. 1 shaft,	Lackawanna,	C. C. Rose,	Scranton,	E. R. Pettibone,	Scranton,	Delaware & Hudson R. R.
New No. 1 shaft,	Lackawanna,	C. C. Rose,	Scranton,	E. R. Pettibone,	Scranton,	Delaware & Hudson R. R.
No. 5 drift,	Lackawanna,	C. C. Rose,	Scranton,	E. R. Pettibone,	Scranton,	Delaware & Hudson R. R.
No. 8 drift,	Lackawanna,	C. C. Rose,	Scranton,	E. R. Pettibone,	Scranton,	Delaware & Hudson R. R.
No. 12 drift,	Lackawanna,	C. C. Rose,	Scranton,	E. R. Pettibone,	Scranton,	Delaware & Hudson R. R.
No. 13 drift,	Lackawanna,	C. C. Rose,	Scranton,	E. R. Pettibone,	Scranton,	Delaware & Hudson R. R.
No. 2 Glenwood:						
No. 2 shaft,	Lackawanna,	C. C. Rose,	Scranton,	E. R. Pettibone,	Scranton,	Delaware & Hudson R. R.
Drift,	Lackawanna,	C. C. Rose,	Scranton,	E. R. Pettibone,	Scranton,	Delaware & Hudson R. R.
Scranton Coal Co.						
Pine Brook,	Lackawanna,	John R. Bryden,	Scranton,	John Van Bergen,	Scranton,	Ontario & Western R. R.
Capouse,	Lackawanna,	John R. Bryden,	Scranton,	John Van Bergen,	Scranton,	Ontario & Western R. R.
Mount Pleasant,	Lackawanna,	John R. Bryden,	Scranton,	John Van Bergen,	Scranton,	Ontario & Western R. R.
West Ridge,	Lackawanna,	John R. Bryden,	Scranton,	John K. Berkhelser,	Priceburgh,	Ontario & Western R. R.
Washeries—						
Capouse,	Lackawanna,	John R. Bryden,	Scranton,	John F. Cumings,	Scranton,	Ontario & Western R. R.
Mount Pleasant,	Lackawanna,	John R. Bryden,	Scranton,	John F. Cumings,	Scranton,	Ontario & Western R. R.
Green Ridge Coal Co.						
Green Ridge slope,	Lackawanna,	W. L. Connell,	Scranton,			Erie R. R.
Pennsylvania Coal Co.						
No. 5 shaft,	Lackawanna,	W. A. May,	Dunmore,	Sidney Williams,	Dunmore,	E. & W. V. R. R.
Old Forge No. 1 shaft,	Lackawanna,	W. A. May,	Dunmore,	Sidney Williams,	Dunmore,	E. & W. V. R. R.
Old Forge slope,	Lackawanna,	W. A. May,	Dunmore,	Sidney Williams,	Dunmore,	E. & W. V. R. R.
Old Forge No. 2 shaft,	Lackawanna,	W. A. May,	Dunmore,	Sidney Williams,	Dunmore,	E. & W. V. R. R.
William Connell & Co.						
Meadow Brook tunnel,	Lackawanna,	Col. E. H. Ripple,	Dunmore,	S. T. Jones,	Scranton,	Del., Lack. & West. R. R.
National shaft,	Lackawanna,	Col. E. H. Ripple,	Dunmore,	S. T. Jones,	Scranton,	Del., Lack. & West. R. R.
Connell Coal Co.						
Wm. A shaft,	Lackawanna,	S. D. Warriner,	Wilkes-Barre,	E. T. Conner,	Wilkes-Barre,	Lehigh Valley R. R.
Lawrence shaft,	Lackawanna,	S. D. Warriner,	Wilkes-Barre,	E. T. Conner,	Wilkes-Barre,	Lehigh Valley R. R.
Lawrence, Upper, drift,	Lackawanna,	S. D. Warriner,	Wilkes-Barre,	E. T. Conner,	Wilkes-Barre,	Lehigh Valley R. R.
Lawrence, Lower, drift,	Lackawanna,	S. D. Warriner,	Wilkes-Barre,	E. T. Conner,	Wilkes-Barre,	Lehigh Valley R. R.

John and Joseph J. Jermyn.						
Jermyn No. 1 shaft,	Lackawanna,	Joseph J. Jermyn,..	Scranton,	E. B. Jermyn,	Rendham,	N. Y. S. & W. R. R.
Jermyn No. 3 shaft,	Lackawanna,	Joseph J. Jermyn,..	Scranton,	E. B. Jermyn,	Rendham,	N. Y. S. & W. R. R.
Jermyn No. 2 shaft,	Lackawanna,	Joseph J. Jermyn,..	Scranton,	E. B. Jermyn,	Rendham,	N. Y. S. & W. R. R.
Elliott, McClure & Co.						
Sibley,	Lackawanna,	James C. McClure,.	Scranton,			Lehigh Valley R. R.
A. D. and F. M. Spencer.						
Spencer shaft,	Lackawanna,	A.D. & F.M.Spencer	Scranton,	H. M. Spencer,	Dunmore,	E. & W. V. R. R.
Nay Aug Coal Co.						
Nay Aug slope,	Lackawanna,	A. J. Hand, Jr.,	Scranton,	J. D. Caryl,	Scranton.	Del., Lack. & West. R. R.
Nay Aug washery,	Lackawanna,	A. J. Hand, Jr.,	Scranton,	J. D. Caryl,	Scranton,	Del., Lack. & West. R. R.
Gibbons Coal Co.						
Gibbon mine,	Lackawanna,	Michael Gibbon,	Scranton.			
North American Coal Co.						
Meadow Brook washery,	Lackawanna,	H. W. Saums,	Wilkes-Barre,	Chas. B. Sharkey,	West Pittston,	Delaware and Hudson Co.
National washery,	Lackawanna,	H. W. Saums,	Wilkes-Barre,	Chas. B. Sharkey,	West Pittston,	Delaware and Hudson Co.
Bulls Head Coal Co.						
Bulls Head slope,	Lackawanna,			Thos. Baggott,	Scranton,	
People's Coal Co.						
Oxford,	Lackawanna,	Jas. G. Shepherd,..	Scranton,	John G. Hayes,	Scranton,	Del., Lack. & West. R. R.
Spring Brook Coal Co.						
Spring Brook shaft,	Lackawanna,	Chas. P. Ford,	Moosic,			Delaware and Hudson Co.
Spring Brook slope,	Lackawanna,	Chas. P. Ford,	Moosic,			Delaware and Hudson Co.

Note.—The Bowen Coal Co. and the Carbon Coal Co. have ceased operation.

TABLE II—Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes', number of persons killed and injured, number of kegs of powder, etc., used in the Second Anthracite District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Delaware, Lackawanna and West. R. R. Co.												
Archbald,	Lackawanna,	306,710	12,980	776	320,466	217	675	4	8	11,739	360	74
Bellevue,	Lackawanna,	291,907	28,581	21,348	341,836	219	785	6	15	10,666	1,000	93
Brisbin,	Lackawanna,	242,148	12,000	3,213	257,361	219	529	......	3	8,807	1,401	60
Cayuga,	Lackawanna,	214,209	16,000	6,712	236,921	177	611	2	6	7,450	3,596	52
Sloan and Central,	Lackawanna,	261,729	49,500	1,276	312,505	218	625	1	12	7,947	....	32 47
Continental,	Lackawanna,	214,790	12,113	1,350	228,253	218	498	3	19	7,290	205	65
Dodge,	Lackawanna,	156,356	12,087	215	168,658	145	532	2	4	6,365	225	59
Diamond,	Lackawanna,	312,526	19,049	5,804	337,379	223	686	1	5	11,038	2,464	84
Hyde Park,	Lackawanna,	252,891	8,546	16,694	278,131	234	503	1	6	9,705	....	77
Manville,	Lackawanna,	51,098	5,167	1,468	57,733	152	429	3	4	7,301	8,422	43
Holden,	Lackawanna,	....	....	....	....	....	38	......	1	....	....	1
Hampton,	Lackawanna,	142,918	19,604	50	162,572	230	325	1	3	5,094	....	49
Pyne,	Lackawanna,	427,775	14,442	2,498	444,715	230	694	1	3	11,474	821	111
Taylor,	Lackawanna,	258,869	17,107	6,198	282,174	205	649	2	7	10,027	768	72
Total and average,	....	3,133,926	227,176	67,602	3,428,704	206.7	7,579	27	96	114,903	19,262	919
Washeries—												
Bellevue,	....	232,435	....	....	232,435	247	46	......	......	....	....	4
Diamond,	....	300,433	14,600	....	315,033	259	48	......	......	....	....	3
Hampton,	....	249,572	....	....	249,572	319	53	......	......	....	....	....
Oxford,	....	45,757	....	....	45,757	207	27	......	......	....	....	....
Total and average,	....	828,197	14,600	....	842,797	258	174	......	......	....	....	7

Austin Coal Company.												
Austin tunnel,	Lackawanna,	14,216	3,920	756	18,892	66	87	......	......	872	2,700	16
Delaware and Hudson Co.												
Dickson,	Lackawanna,	244,029	7,916	3,287	255,232	214	558	......	8	12,324	8,103	57
Von Storch,	Lackawanna,	245,932	30,400	3,610	279,942	219	573	3	1	11,242	7,817	78
Manville,	Lackawanna,	57,104	5,166	829	63,099	*	......	......	......	......	......	......
Total and average,	......	547,065	43,482	7,726	598,273	216	1,121	3	9	23,566	15,920	105
The Hudson Coal Co.												
Greenwood No. 1,	Lackawanna,	119,108	4,596	1,314	125,018	113	531	1	6	3,289	6,805	91
Greenwood No. 2,	Lackawanna,	61,925	4,683	......	66,608	103	271	2	3	3,369	3,896	43
Total and average,	......	181,033	9,279	1,314	191,626	106	802	3	9	6,658	10,701	134
Scranton Coal Co.												
Pine Brook,	Lackawanna,	233,338	16,000	4,836	254,174	172	711	6	6	13,216	7,087	73
Capouse,	Lackawanna,	272,864	14,200	3,407	290,471	180	643	1	7	7,258	3,235	82
Mount Pleasant,	Lackawanna,	171,571	16,000	21,595	209,166	177	634	3	17	12,848	5,200	41
West Ridge,	Lackawanna,	95,444	6,000	5,637	107,081	155	400	1	2	5,869	2,593	42
Total and average,	......	773,217	52,200	35,475	860,892	171	2,388	11	32	39,191	18,115	238
Washeries—												
Capouse,	Lackawanna,	267,217	4,800	......	272,017	242	66	......	......	......	......	......
Mount Pleasant,	Lackawanna,	44,629	5,000	2	49,631	149	65	......	......	......	......	......
Total and average,	......	311,846	9,800	2	321,648	195	131	......	......	......	......	......
Green Ridge Coal Co.												
Green Ridge slope,	Lackawanna,	132,801	19,000	18,088	169,889	187	510	2	1	7,506	2,650	48
Pennsylvania Coal Co.												
Old Forge,	Lackawanna,	231,938	8,205	......	240,143	154	774	2	4	9,689	8,397	65
No. 5 shaft,	Lackawanna,	152,286	4,290	......	156,576	171	398	1	3	6,316	1,420	38
Bunker Hill,	Lackawanna,	......	......	......	......	......	2	......	......	......	......	......
Total and average,	......	384,224	12,495	......	396,719	162	1,174	3	7	16,005	9,817	103
William Connell & Co.												
National,	Lackawanna,	116,283	8,500	9,866	134,649	168	393	......	1	2,760	2,500	28
No. 4 tunnel,	Lackawanna,	......	......	......	......	......	......	1	......	4,824	9,500	22
Total and average,	......	116,283	8,500	9,866	134,649	168	393	1	1	7,584	12,000	50
Connell Coal Co.												
William A,	Lackawanna,	360,254	20,000	4,270	384,524	251	784	2	4	14,137	11,900	79
Lawrence,	Lackawanna,	......	......	......	......	......	......	......	1	......	......	......
Total and average,	......	360,254	20,000	4,270	384,524	251	784	2	5	14,137	11,900	79

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
John and Joseph J. Jermyn.												
Jermyn No. 1,	Lackawanna,	198,322	15,930	5,012	219,264	172	736	3	3	11,514	2,000	52
Jermyn No. 2,	Lackawanna,	223,212	14,000	....	237,212	179	595	.....	3	8,775	6,700	36
Total and average,		421,534	29,930	5,012	456,476	175	1,331	3	6	20,289	8,700	88
Elliott, McClure & Co.												
Sibley,	Lackawanna,	194,364	10,950	2,008	207,322	208	496	3	4	6,338	4,025	42
A. D. and F. M. Spencer.												
Spencer shaft,	Lackawanna,	64,937	35,000	2,732	102,669	125	216	......	2	1,375	915	45
Nay Aug Coal Co.												
Nay Aug slope,	Lackawanna,	30,460	2,131	57	32,648	111	116	2	2	988	725	19
Nay Aug washery,	Lackawanna,	23,758	....	....	23,758	178	....	......	......	....	....	....
Total and average,		54,218	2,131	57	56,406	144	116	2	2	988	725	19
Gibbons Coal Co.												
Gibbons mine,	Lackawanna,	3,824	1,700	13,706	19,230	260	51	......	1	824	300	10
North American Coal Co.												
National washery,	Lackawanna,	162,328	4,920	....	167,248	246	33	......	1	....	....	3
Meadow Brook washery,	Lackawanna,	65,890	2,480	1,703	70,073	248	20	......	......	....	....	2
Total and average,		228,218	7,400	1,703	237,321	247	53	......	1	....	....	5
Bowen Coal Co.												
Bowen washery,	Lackawanna,	8,833	1,400	....	10,233	36	16	......	......	....	....	1

Bulls Head Coal Co. Bulls Head slope,	Lackawanna,	21,149	1,025	6,954	29,128	119	119	1	......	1.200	550	25
Carbon Coal Co. Carbon washery,	Lackawanna,	14,874	3,600	....	18,474	132	14	......	......	....	....	....
People's Coal Co. Oxford,	Lackawanna,	115,143	8,635	28,765	152,543	158	345	2	4	5,295	50	65
Spring Brook Coal Co. Spring Brook,	Lackawanna,	28,156	5,000	2,489	35,645	151	123	......	6	1,800	700	15
Grand total,	....	7,938,312	527,223	208,525	8,674,060	171	18,023	63	186	268,529	119,030	2,014

TABLE II—Continued.

		Number of Boilers.				Total horse power.	Locomotives.			Number of steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Delaware, Lackawanna and West. R. R. Co.,	Lackawanna,	225	8,161	25	4,245	12,406	15	......	......	197	14,787	35	28,312	16,305	4	......
Del., Lacka. & West. R. R. Co. washeries,	Lackawanna,	......	....	8	320	320	......	......	......	23	829	....	....	....	......	......
Austin Coal Co.,	Lackawanna,	7	140	1	100	240	1	......	......	16	485	1	400	100	1	2
Delaware and Hudson Co.,	Lackawanna,	......	....	7	2,100	2,100	......	......	......	55	3,614	3	3,120	2,360	......	......
The Hudson Coal Co.,	Lackawanna,	22	595	4	400	995	2	......	......	20	886	3	1,050	885	......	2
Scranton Coal Co.,	Lackawanna,	12	180	17	2,330	2,510	3	......	2	36	3,372	7	4,315	2,700	1	......
Scranton Coal Co. washeries,	Lackawanna,	......	....	5	700	700	......	......	......	3	105	5	3,500	3,500	......	......
Green Ridge Coal Co.,	Lackawanna,	21	525	....	....	525	......	......	2	10	1,400	2	600	500	1	......
Pennsylvania Coal Co.,	Lackawanna,	......	....	12	1,650	1,650	2	......	......	30	2,020	4	2,640	1,170	......	1
William Connell & Co.,	Lackawanna,	18	450	2	150	600	1	......	......	8	360	3	1,500	1,000	......	......
Connell Coal Co.,	Lackawanna,	30	1,080	1	250	1,330	......	......	......	16	1,694	3	1,200	650	1	1
John and Joseph J. Jermyn,	Lackawanna,	24	550	7	1,050	1,600	1	......	......	20	1,519	4	3,000	1,000	......	......
Elliott, McClure & Co.,	Lackawanna,	8	....	4	550	550	......	......	......	11	....	3	....	....	......	......
A. D. and F. M. Spencer,	Lackawanna,	11	275	1	30	305	......	......	......	12	495	1	500	500	......	......
Nay Aug Coal Co.,	Lackawanna,	......	....	3	180	180	......	......	......	6	218	....	....	....	......	......
Gibbons Coal Co.,	Lackawanna,	1	40	1	20	60	......	......	......	2	35	....	....	....	......	......
North American Coal Co.,	Lackawanna,	......	....	8	680	680	......	......	......	6	320	....	....	....	......	......
Bowen Coal Co.,	Lackawanna,	......	....	4	160	160	......	......	......	2	90	....	....	....	......	......
Bulls Head Coal Co.,	Lackawanna,	3	52	....	....	52	......	......	......	......	....	....	....	....	......	......
Carbon Coal Co.,	Lackawanna,	......	....	2	120	....	......	......	......	5	137	....	....	....	......	......
People's Coal Co.,	Lackawanna,	2	470	5	750	1,200	......	......	......	6	300	3	1,575	750	1	1
Spring Brook Coal Co.,	Lackawanna,	6	120	....	....	120	......	......	......	4	120	4	550	350	......	......
Total and average,	....	392	12,738	115	15,665	28,273	25	......	9	495	32,786	81	52,262	31,770	9	8

TABLE III—Showing the number of each class of employes at each colliery in the Second Anthracite District, during the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total, inside and outside.
		Inside foremen or mine boss.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Del. Lack. & West. R. R. Co.																	
Archbald,	Lackawanna,	1	3	184	175	61	12	72	508	1	7	8	96	2	47	161	669
Bellevue,	Lackawanna,	3	5	190	194	81	22	83	578	1	5	17	111	2	71	207	785
Brisbin,	Lackawanna,	2	3	145	151	52	12	46	411	1	6	8	56	2	45	118	529
Cayuga,	Lackawanna,	2	5	155	155	63	12	66	458	2	6	9	77	2	57	153	611
Sloan and Central,	Lackawanna,	1	3	69	69	28	6	41	217	1	5	11	79	2	61	159	376
		1	3	74	75	35	15	28	231	......	2	7	....	....	5	14	245
Continental,	Lackawanna,	2	3	120	120	46	12	55	358	1	6	8	64	2	59	140	498
Dodge,	Lackawanna,	2	3	131	131	56	18	60	401	1	6	11	46	1	66	131	532
Diamond,	Lackawanna,	2	6	176	177	58	37	69	525	1	8	16	66	2	68	161	686
Hyde Park,	Lackawanna,	1	3	134	132	57	18	40	385	1	4	8	65	2	38	118	503
Manville,	Lackawanna,	1	5	118	118	47	12	30	331	1	5	11	43	2	36	98	429
Holden,	Lackawanna,	1	1	1	....	2	....	8	13	1	1	4	....	1	18	25	38
Hampton,	Lackawanna,	1	2	71	71	24	11	28	208	1	3	11	62	3	37	117	325
Pyne,	Lackawanna,	1	4	177	184	71	12	63	512	2	8	9	100	2	61	182	694
Taylor,	Lackawanna,	2	3	171	178	57	17	52	480	1	6	12	78	3	69	169	649
Total and average,	....	23	52	1,916	1,930	738	216	741	5,616	16	78	150	943	28	738	1,953	7,569
Washeries—																	
Bellevue,	Lackawanna,	1	......	....	....	....	....	6	7	1	1	2	4	1	30	39	46
Diamond,	Lackawanna,	......	1	....	7	....	....	....	8	1	2	4	2	2	29	40	48
Hampton,	Lackawanna,	......	1	....	....	....	....	5	6	1	1	3	5	....	37	47	53
Oxford,	Lackawanna,	1	......	....	....	....	....	3	4	1	2	2	....	2	16	23	27
Total and average,	....	2	2	....	7	....	....	14	25	4	6	11	11	5	112	149	174

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total, inside and outside.
		Inside foreman or mine boss.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Austin Coal Co.																	
Austin tunnel,	Lackawanna,	1	......	20	20	6	....	5	52	1	3	4	16	2	9	35	87
Delaware and Hudson Co.																	
Dickson,	Lackawanna,	2	5	151	151	71	16	55	451	1	3	11	43	2	47	107	558
Von Stroch,	Lackawanna,	1	4	139	139	87	13	71	454	1	12	13	33	4	56	119	573
Manville,*	Lackawanna,	......	......	....	....	....	....	....	....	......	......	......	....	....	....	....	....
Total and average,	....	3	9	290	290	158	29	126	905	2	15	24	76	6	103	226	1,131
The Hudson Coal Co.																	
Greenwood No. 1,	Lackawanna,	2	......	143	127	48	14	29	363	1	10	9	75	1	72	168	531
Greenwood No. 2,	Lackawanna,	1	......	64	68	26	2	19	180	1	7	6	25	1	51	91	271
Total and average,	....	3	......	207	195	74	16	48	543	2	17	15	100	2	123	259	802
Scranton Coal Co.																	
Pine Brook,	Lackawanna,	1	4	160	170	92	48	69	544	1	10	7	83	5	61	167	711
Capouse,	Lackawanna,	1	3	156	180	82	16	74	512	1	9	7	58	5	51	131	643
Mount Pleasant,	Lackawanna,	2	3	170	170	66	22	57	490	1	8	9	79	4	43	144	634
West Ridge,	Lackawanna,	1	2	90	90	47	18	35	283	1	5	5	51	2	53	117	400
Total and average,	....	5	12	576	610	287	104	235	1,829	4	32	28	271	16	208	559	2,388

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*See Delaware, Lackawanna and Western Railroad.

Washeries—																	
Capouse,	Lackawanna,	......	......	......	......	......	......	......	......	1	2	5	7	5	46	66	66
Mount Pleasant,	Lackawanna,	......	......	......	......	......	......	......	......	1	2	3	8	1	50	65	65
Total and average,		......	......	......	......	......	......	......	......	2	4	8	15	6	96	131	131
Green Ridge Coal Co.																	
Green Ridge slope,	Lackawanna,	2	4	149	126	69	28	26	404	1	6	11	43	3	42	106	510
Pennsylvania Coal Co.																	
Old Forge,	Lackawanna,	3	3	260	176	90	8	51	591	1	5	21	98	1	57	183	774
No. 5 shaft,	Lackawanna,	1	1	130	100	36	8	19	295	1	3	7	56	1	35	103	398
Bunker Hill,	Lackawanna,	......	......	......	......	......	......	......	......	......	......	......	......	......	2	2	2
Total and average,		4	4	390	276	126	16	70	886	2	8	28	154	2	94	288	1,174
William Connell & Co.																	
No. 4 tunnel,	Lackawanna,	1	......	65	50	28	7	11	162	......	4	2	......	......	8	14	176
National shaft,	Lackawanna,	1	1	52	21	25	4	17	121	1	4	8	60	3	20	96	217
Total and average,		2	1	117	71	53	11	28	283	1	8	10	60	3	28	110	393
Connell Coal Co.																	
William A,	Lackawanna,	4	1	180	150	80	9	76	500	1	10	13	88	4	87	203	703
Lawrence,	Lackawanna,	1	......	30	25	17	1	7	81	......	......	......	......	......	......	......	81
Total and average,		5	1	210	175	97	10	83	581	1	10	13	88	4	87	203	784
John and Joseph J. Jermyn.																	
Jermyn No. 1,	Lackawanna,	1	4	202	180	41	40	90	558	1	5	12	70	4	86	178	736
Jermyn No. 2,	Lackawanna,	1	2	180	154	73	14	59	483	1	5	7	37	2	60	112	595
Total and average,		2	6	382	334	114	54	149	1,041	2	10	19	107	6	146	290	1,331
Elliott, McClure & Co.																	
Sibley,	Lackawanna,	2	1	109	100	45	6	68	331	1	5	8	105	3	43	165	496
A. D. and F. M. Spencer.																	
Spencer shaft,	Lackawanna,	1	......	53	53	......	14	15	136	1	6	......	29	......	44	80	216
Nay Aug Coal Co.																	
Nay Aug Slope,	Lackawanna,	1	......	19	19	17	1	6	63	1	4	5	15	2	26	53	116
Gibbons Coal Co.																	
Gibbons mine,	Lackawanna,	1	......	13	13	4	......	1	32	1	1	2	9	2	4	19	51
North American Coal Co.																	
National washery,	Lackawanna,	......	......	......	......	......	......	......	......	1	......	5	1	2	24	33	33
Meadow Brook washery,	Lackawanna,	......	......	......	......	......	......	......	......	1	......	2	5	2	10	20	20
Total and average,		......	......	......	......	......	......	......	......	2	......	7	6	4	34	53	53
Bowen Coal Co.																	
Bowen washery,	Lackawanna,	......	......	......	......	......	......	......	......	......	1	2	1	1	11	16	16

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total, inside and outside.
		Inside foreman or mine boss.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Bulls Head Coal Co. Bulls Head slope,	Lackawanna,	1	1	22	24	14	....	14	76	1	2	2	20	2	16	43	119
Carbon Coal Co. Carbon washery,	Lackawanna,	.....	......	....	....	....	....	....	....	1	......	4	....	....	9	14	14
People's Coal Co. Oxford,	Lackawanna,	1	2	86	92	40	23	18	262	1	10	6	22	4	40	83	345
Spring Brook Coal Co. Spring Brook,	Lackawanna,	1	......	30	24	12	1	8	76	1	2	6	24	3	11	47	123
Grand totals,	....	60	95	4,589	4,459	1,854	429	1,655	13,141	48	228	363	2,115	104	2,024	4,882	18,029

TABLE III—Continued.

Names of Operators and Collieries.	County.	January.	February	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Delaware, Lackawanna and Western R. R. Co.,	Lackawanna,	22.4	17.3	19.3	14.3	16.6	13.9	13.3	18.4	15.7	18.4	20.3	16.9	207.0
Delaware, Lackawanna and Western washeries,	Lackawanna,	23.0	17.2	17.6	18.1	20.1	20.3	22.1	24.6	22.3	20.8	23.9	28.1	208.0
Austin Coal Co.,	Lackawanna,	10.7	4.5	6.1	3.6	5.7	16.4	....	....	....	....	9.7	9.8	66.5
Delaware and Hudson Co.,	Lackawanna,	20.75	20.12	22.37	14.0	18.87	18.75	19.62	20.87	16.75	14.75	12.25	17.5	216.50
The Hudson Coal Co.,	Lackawanna,	....	....	10.5	10.7	11.6	10.8	12.2	12.0	10.1	10.2	9.3	11.1	108.0
Scranton Coal Co.,	Lackawanna,	12.8	12.8	14.1	11.6	14.0	14.6	15.5	15.1	13.5	13.7	15.1	14.1	171.0
Scranton Coal Company washeries,	Lackawanna,	9.7	8.7	14.2	25.0	18.9	14.0	13.0	13.4	19.1	18.2	19.8	21.1	196.0
Green Ridge Coal Co.,	Lackawanna,	15.2	16.0	16.5	13.8	14.8	17.4	15.8	20.6	17.6	19.8	19.4	.8	187.7
Pennsylvania Coal Co.,	Lackawanna,	14.5	14.3	13.7	11.7	13.0	15.4	13.0	14.5	13.1	14.8	13.2	11.7	163
William Connell and Co.,	Lackawanna,	14.8	14.1	15.0	14.6	13.9	13.6	13.2	14.2	13.5	14.8	13.7	12.9	168.3
Connell Coal Co.,	Lackawanna,	22.7	21.8	24.1	19.2	22.4	22.7	13.0	20.2	20.4	23.0	22.9	19.2	251.6
John and Joseph J. Jermyn,	Lackawanna,	15.8	16.5	14.8	11.7	13.5	12.6	16.5	15.7	13.5	15.6	14.2	14.9	175.2
Elliott, McClure & Co.,	Lackawanna,	21.9	20.5	22.7	13.8	17.3	17.4	15.0	15.0	13.2	19.4	15.8	16.5	208.5
A. D. and F. M. Spencer,	Lackawanna,	11.3	12.1	10.8	7.9	12.0	11.0	11.0	13.0	9.4	8.8	11.8	6.3	125.4
Nay Aug Coal Co.,	Lackawanna,	7.5	8.75	11.0	7.75	11.25	9.75	9.5	10.75	7.5	8.5	8.75	10.25	111.25
Gibbons Coal Co.,	Lackawanna,	25.0	20.0	23.0	25.0	22.0	18.0	18.0	16.0	22.0	23.0	24.0	24.0	260.0
North American Coal Co.,	Lackawanna,	25.0	20.5	27.0	27.5	17.5	12.5	19.0	23.0	16.0	19.0	22.5	17.5	247.0
Bowen Coal Co.,	Lackawanna,	10.5	6.0	....	19.5	....	....	....	....	....	....	....	....	36.0
Bulls Head Coal Co.,	Lackawanna,	15.0	14.0	14.5	9.5	11.5	12.0	4.0	....	....	6.5	16.5	15.5	119.0
Carbon Coal Co.,	Lackawanna,	16.0	19.0	22.0	23.0	21.0	24.0	7.0	....	....	....	....	....	132.0
People's Coal Co.,	Lackawanna,	3.0	8.2	10.2	9.1	10.4	8.4	13.6	17.5	14.5	23.4	19.7	20.5	158.5
Spring Brook Coal Co.,	Lackawanna,	16.0	15.0	15.0	12.0	14.0	16.0	15.0	13.0	17.0	18.0	....	....	151.0

TABLE IV—List of fatal accidents that occurred in and about the mines of the Second Anthracite District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	4	John Morgan,	English,	Laborer,	48	M.	1	2	Bellevue shaft,	Lackawanna,	Killed by a piece of top coal which fell from the dge of a wall in a chamber in the Big vein.
	7	Daniel Jones,	Welsh,	Breaker boy,	16	S	....	....	Capouse breaker,	Lackawanna,	His body was found in a conveyor line in the breaker. Life was extinct. An inquest was held by the coroner.
	9	Tim Shea,	Irish,	Miner,	30	S.	....	....	Pine Brook,	Lackawanna,	Fatally injured by flying coal from a blast. Shea was returning to the face to "retouch" the squib. He died the same day.
	15	George Peterach,	Pole,	Miner,	40	M.	1	....	Pine Brook,	Lackawanna,	Instantly killed by flying coal from a blast fired by his own hand in a chamber in No. 1 Dunmore vein.
	17	Martin Bartleg,	Irish,	Miner,	28	S	....	....	Pine Brook,	Lackawanna,	Instantly killed by falling roof rock; was restanding a dislodged prop when the rock struck.
	23	John Walsh,	Irish,	Driver,	23	S.	....	....	Bellevue breaker,	Lackawanna,	Fatally injured; crushed between a culm car and the wall of the fire room; died the same day.
	31	Louis Zegasky,	Pole,	Miner,	35	S.	....	....	Sibley,	Lackawanna,	Pulling some roof rock down, which fell on him. He died instantly.
eb.	4	John Scott,	Irish,	Miner,	40	M.	1	4	Central,	Lackawanna,	Was mining out some coal, when a piece of the upper bench of the vein fell and rolled on him.
	4	Frank McAvick,	Lithuanian,	Miner,	30	S.	....	....	Cayuga,	Lackawanna,	Killed by an explosion of gas. McAvick and his laborer went into abondaned working and exploded the gas.
	14	Patrick O'Horo,	Irish,	Oiler,	65	M.	1	....	Green Ridge breaker,	Lackawanna,	Struck by an empty car on the trestle leading to the breaker. He fell to the ground and sustained injuries from which he died.
	27	John Gallagher,	American,	Laborer,	20	S.	....	....	Nay Aug slope,	Lackawanna,	Instantly killed at face of chamber by falling bony. The miner's attention had been called to the condition of the roof, but he failed to secure it.

March	3	Joseph Constantzo,	Italian,	Laborer,	24	S.	....	....	Jermyn No. 3,	Lackawanna,	Found dead in sump. There was evidence that the deceased had attempted to climb up the shaft on buntons.
	6	John Becklnick,	Pole,	Laborer,	50	M.	1	4	Payne,	Lackawanna,	Killed while attempting to leave the cage at the surface landing after the signal to lower had been given.
	9	John Bromskie,	Slav,	Miner,	55	W.	....	3	Jermyn No. 3,	Lackawanna,	Instantly killed by fall of rock. He had neglected to make the necessary examination of the roof after firing a blast.
	11	Wm. H. Davies,	Welsh,	Miner,	35	S.	....	....	Archbald,	Lackawanna,	Killed by top coal. The miner had fired a blast, and he did not make a careful examination after.
	12	Richard Gallagher,	Irish,	Driver,	16	S.	....	....	Manville,	Lackawanna,	Was found on the gangway road in an injured condition; fell off the bumper of the car he was driving. He died two days later.
	20	Benj. J. Lewis,	English,	Laborer,	46	M.	1	6	Old Forge No. 1 slope,	Lackawanna,	Instantly killed by fall of rock at face of chamber.
	25	Thos. Tinner,	American,	Driver,	16	S.	....	....	Sibley,	Lackawanna,	Killed between car and rib on narrow side of gangway road in slope.
	28	Chas. English,	Italian,	Miner,	38	S	....	....	Sibley,	Lackawanna,	Killed by a fall of rock. He was examining the roof after firing a blast, when the fall took place.
April	11	Flora Lisk,	American,	Laborer,	28	M.	1	3	Nay Aug slope,	Lackawanna,	Killed by a fall of roof. The miner had been warned of the condition of the roof. The laborer objected to its being taken down, as he claimed the rock would be in his way.
	11	Anthony Casper,	Lithuanian,	Miner,	28	S.	....	....	West Ridge,	Lackawanna,	Was returning to the face to light a squib, which he thought had missed. The blast exploded, the flying coal striking him with fatal results.
	13	Michael Schultis,	Hungarian,	Headman,	23	M.	1	2	Mount Pleasant,	Lackawanna,	Fell down main shaft while assisting to change the carriage.
	26	Thomas E. Williams,	Welsh,	Miner,	54	S.	....	....	Bellevue shaft,	Lackawanna,	The miner had removed two props from under the top coal, which he was taking down, and finding the coal did not come down, he was drilling a hole at the face when the coal fell.
May	4	John Walsh,	American,	Miner,	28	S.	....	....	Continental,	Lackawanna,	Was struck by a piece of coal which fell from the face of his chamber in the Rock vein. He died the same day.
	4	John Rostar,	Austrian,	Laborer,	20	S.	....	....	Green Ridge slope,	Lackawanna,	Instantly killed by fall of rock at a point 60 feet back from the face of the chamber, while the miner was examining the face after a blast.
	8	Thomas Loughney,	Irish,	Laborer,	50	S.	....	....	Pennsylvania No. 5,	Lackawanna,	Loughney was mining out some coal at the face of a gangway, when a slab of rock fell, instantly killing him.
	17	Frank Barowskie,	Pole,	Laborer,	18	S.	....	....	Dodge,	Lackawanna,	Died from injuries received by a fall of roof at face of a gangway in the Big vein.

TABLE IV—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
24	George Watson,	Scotch,	Shaft man,	48	M.	1	5	Manville,	Lackawanna,	Was engaged on a platform in the supply shaft. The engineer lowered the carriage without a signal. It struck Watson with fatal results.
29	Albert Gobop.	Pole,	Laborer,	42	M.	1	5	Archbald,	Lackawanna,	Struck by cars on inside gravity plane. The victim should have walked on the manway which is provided.
31	John Boyd,	Pole,	Miner,	35	M.	1	....	Von Storch slope,	Lackawanna,	Died June 3, from injuries received by falling roof, following a blast fired in face of chamber.
June 10	Bole Ginta,	French,	Miner,	62	M.	1	4	Hyde Park,	Lackawanna,	Died June 25th from injuries received from a fall of roof at a point near face of chamber in the Clark vein.
11	Thomas Jolly,	English,	Miner,	47	M.	1	....	Old Forge Slope,	Lackawanna,	Was endeavoring to arrest a car which had started away from the face of his chamber, when he sustained injuries, from which he died June 19.
July 2	David James,	American,	Driver,	16	S.	....	....	Taylor shaft,	Lackawanna,	Died from injuries by cars inside. The victim was away from his own post when the accident occurred. Died on July 3d.
17	Frank Basco,	Pole,	Driver,	17	S.	....	....	Bulls Head,	Lackawanna,	Basco was on a train of moving mine cars, inside, when he fell, receiving fatal injuries.
22	John Sutula,	Pole,	Miner,	34	M.	1	....	Cayuga,	Lackawanna,	Instantly killed by fall of roof in a cross cut in the Clark vein pitch workings.
24	Jacob Theobald,	German,	Laborer,	40	M.	1	2	Archbald,	Lackawanna,	Killed by fall of roof in a chamber in the Big vein. The victim had not obeyed the warning given him by the fire boss in the morning.
Aug. 1	Joe Mattle,	Italian,	Laborer,	18	S.	....	....	William A,	Lackawanna,	Entered the face of the chamber against his miner's order. He was instantly killed by fall of rock.

	4	James McLoughlin,	Irish,	Footman,	23	S.	....	....	Oxford shaft,	Lackawanna,	Killed while trying to ascend the shaft on a rope.
	12	Thomas Munay,	Irish,	Loader,	50	M.	1	1	William A breaker,	Lackawanna,	Killed by a railroad car. The car was being run according to Munay's order.
	9	James McGowan,	Irish,	Miner,	46	M.	1	6	Mount Pleasant,	Lackawanna,	He mistook the report of a neighboring Miners blast for his own. He was on the way to his place when he was struck by flying coal.
	13	Elias Birbeck,	American,	Door boy,	16	S.	....	....	Von Storch slope,	Lackawanna,	Was sitting in an ampty car. A passing train of loaded cars jumped the track, striking the one in which he was. He received fatal injuries.
	22	Mike Obritas,	Pole,	Miner,	65	W.	....	1	Jermyn No. 2,	Lackawanna,	The victim was walking along the haulage road inside. He was overtaken by a train and killed.
Sept.	10	Wm. Phillips,	Welsh,	Driver,	17	S.	....	....	Tripp slope,	Lackawanna,	Crushed between a car and a pillar and was instantly killed. The latches at the branch had not been set properly.
	20	Edward Jordan,	Irish,	Miner,	37	M.	1	5	Central,	Lackawanna,	Killed by fall of roof while restanding a prop which had been dislodged by a blast.
Oct.	12	Thomas Gray,	Irish,	Laborer,	47	M.	1	5	Bellevue shaft,	Lackawanna,	Fatally injured by fall of rock in the Oxford section of the workings of the Big vein; he died Oct. 18th.
	25	Jacob Lawn,	German,	Loader,	45	M.	1	3	Hampton breaker,	Lackawanna,	Fell under a railroad car that he was running into the breaker, and instantly killed.
	31	John Costello,	Irish,	Driver,	16	S.	....	....	Pine Brook,	Lackawanna,	Instantly killed by a fall of roof in a gangway in No. 2, Dunmore vein.
Nov.	6	Ignatz Oland,	Pole,	Laborer,	21	S.	....	....	Greenwood No. 2 shaft	Lackawanna,	Killed by fall of roof while assisting his miner to restand a prop which had been dislodged by flying coal from a blast.
	7	John Temko,	Hungarian,	Laborer,	29	M.	1	2	Archbald,	Lackawanna,	By falling roof. The miners were sounding it after a blast.
	8	Anthony Barkowskie,	Pole,	Laborer,	26	M.	1	6	Bellevue shaft,	Lackawanna,	Killed at face of gangway in New County vein by a "saddle" falling on him.
	11	Mike Hanahoe,	Irish,	Miner,	32	M.	1	3	Greenwood No. 12 drif	Lackawanna,	Dynamite which he was placing in a hole exploded. He sustained injuries from which he died Nov. 13th in Lackawanna hospital.
	14	Samuel Dingman,	German,	Fireman,	28	S.	....	....	Oxford breaker,	Lackawanna,	Caught in conveyor line which supplies the fire room with fuel; died in the West Side Hospital.
	14	Wm. Prolinsky,	Pole,	Miner,	35	M.	1	3	Manville,	Lackawanna,	Killed by explosion of gas in abandoned workings after passing over two danger signals.
	19	Owen Gallagher,	Irish,	Miner,	29	M.	1	1	Von Storch slope,	Lackawanna,	Instantly killed by a fall of roof in a chamber in the Rock vein within a few hours of the time he commenced to work in the place.

TABLE IV—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Dec. 2	William Kelly,	Irish,	Miner,	65	M.	1	....	Dodge,	Lackawanna,	Fatally injured by fall of roof in a chamber in the Rock vein. Props which had been dislodged by flying coal had not been restood.
7	Wm. McClosky,	Pole,	Miner,	30	M.	1	2	Pine Brook,	Lackawanna,	Instantly killed by fall of roof rock. He had neglected to restand a number of props which had been dislodged by a previous blast.
14	Richard Evans,	American,	Driver,	19	S.	....	....	Mount Pleasant,	Lackawanna,	Fatally injured by an explosion of gas in Dunmore No. 2 vein on an idle day; died on the following day.
14	John Zavoloski,	Pole,	Miner,	30	M.	1	1	Greenwood No. 2,	Lackawanna,	Injured while trying to steady a loaded car down a grade; died the following day in the Lackawanna Hospital.
16	Roderick Dunn,	Irish,	Loader,	20	S.	....	....	Bellevue breaker,	Lackawanna,	Instantly killed by railroad cars. He was uncoupling a car when the locomotive bumped up a train of empty cars.
18	I. I. Jones,	Welsh,	Co. man,	40	S.	....	....	National,	Lackawanna,	Fell on carriage while clearing ice. His head came in contact with the rail; died on the 20th of Dec.
20	Dan'l James,	Welsh,	Miner,	59	M.	1	....	Continental,	Lackawanna,	Fatally injured by fall of roof; died the same day.
14	Henry Seperer,	Pole,	Loader,	36	S.	....	....	Taylor breaker,	Lackawanna,	Fatally injured by Railroad cars under the breaker. He died in Moses Taylor Hospital on the same day.
31	Frank Murphy,	Irish,	Driver,	20	S.	....	....	Pine Brook,	Lackawanna,	Was sitting on the bumper of the front car of a trip he was driving on to the head of Contract plane in Dunmore no 2 vein. He leaned over in order to pass an empty car standing on the empty car track, and fell under the train and sustained injuries from which he died the same day in Lackawanna Hospital.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Second Anthracite District for the year ending December 31, 1901.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan. 2	Jos. Stankievicy,	Pole,	Laborer,	24	M.	Continental,	Lackawanna,	Slightly injured by fall of roof.
2	Daniel Evans,	Welsh,	Miner,	38	M.	Continental,	Lackawanna,	Nose fractured by fall of roof.
2	Thos. W. Davies,	Welsh,	Miner,	55	M.	Continental,	Lackawanna,	Flesh wound on thigh, by a piece of rock, which he was pulling down.
4	Richard Gallagher,	Irish,	Driver,	16	S.	Manville,	Lackawanna,	Leg injured by falling under mine car.
5	Edward Pidtosky,	Pole,	Driver,	15	S.	Jermyn No. 1,	Lackawanna,	Face injured by being struck by haulage rope.
7	Michael Stauschefskie,	Pole,	Driver,	36	M.	Sloan,	Lackawanna,	Jaw injured by a lever he was using to replace car on track.
8	Frank McGinty,	American,	Door boy,	14	S.	Hyde Park,	Lackawanna,	Fell off a moving car and was injured.
10	William Thomas,	Welsh,	Miner,	60	M.	Continental,	Lackawanna,	Slightly injured by falling in his working place.
12	John Snyder,	German,	Laborer,	36	M.	Pine Brook,	Lackawanna,	Leg fractured by flying coal from a blast.
12	Albert Haines,	American,	Door boy,	15	S.	Continental,	Lackawanna,	Head injured between cage and side of shaft.
14	Edward Clark,	Irish,	Door boy,	15	S.	Mount Pleasant,	Lackawanna,	Leg fractured between the bumper of cars.
17	Jno. Evans,	American,	Brakeman,	20	S.	Taylor,	Lackawanna,	Foot injured by cars.
19	Ivory E. Richards,	Welsh,	Miner,	36	M.	Mount Pleasant,	Lackawanna,	Struck by flying coal from blast.
22	Martin Piloalis,	Pole,	Laborer,	30	S.	Mount Pleasant,	Lackawanna,	Arm fractured by fall of roof.
22	Geo. Bradburny,	English,	Laborer,	58	M.	Sloan,	Lackawanna,	Injured by a fall of roof.
24	Geo. Vantkoski,	Pole,	Laborer,	27	S.	Capouse,	Lackawanna,	Painfully injured in shaft. He boarded the cage without permission.
25	Patrick Dunkin,	Irish,	Runner,	17	S.	Sloan,	Lackawanna,	Arm fractured and leg severely injured by cars.
26	John Stavinsky,	Pole,	Laborer,	23	S.	Jermyn No. 2,	Lackawanna,	These men were painfully injured by a "runaway" car on the culm plane outside. They had neglected to sprag the car.
26	Paul Honelack,	Pole,	Laborer,	42	S.	Jermyn No. 2,	Lackawanna,	

TABLE V—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
26	Chas. Haues,	German,	Driver,	18	S.	Sibley,	Lackawanna,	Leg fractured between an empty car and rib.
27	Geo. Silinsky,	Russian,	Laborer,	30	S.	Tripp drift,	Lackawanna,	Back injured by fall of roof.
30	Dominick Leonardi,	Italian,	Miner,	30	S.	Wm. A,	Lackawanna,	Leg fractured by a fall of coal.
Feb. 1	Martin Marion,	American,	Miner,	32	S.	Manville,	Lackawanna,	Struck by fall of roof.
1	Amedio Capio,	Italian,	Laborer,	27	S.	Sibley,	Lackawanna,	Leg fractured and arm injured by fall of roof.
2	David Griffiths,	American,	Driver,	17	S.	Taylor,	Lackawanna,	Injured while riding on haulage rope train.
4	Alvo. Quick,	English,	Driver,	15	S.	Mount Pleasant,	Lackawanna,	Skull fractured, struck by a door which was forced open by an explosion of gas.
4	John Black,	Lithuanian,	Laborer,	23	S.	Cayuga,	Lackawanna,	Black was severely and Haggerty and Coursey were slightly injured by an explosion of gas.
4	John Haggerty,	American,	Runner,	22	S.	Cayuga,	Lackawanna,	
4	Michael Coursey,	American,	Driver,	18	S.	Cayuga,	Lackawanna,	
5	Jos. Gallagher,	American,	Driver,	16	S.	Tripp drift,	Lackawanna,	Hand cut and bruised by falling under car.
5	Chas. Evans,	English,	Miner,	53	M.	Archbald,	Lackawanna,	Hip dislocated and head cut by fall of roof.
6	Owen Brink,	American,	Laborer,	23	S.	Dickson,	Lackawanna,	Struck by flying coal from a blast.
12	James Dempsey,	Irish,	Wheelman,	20	S.	Pennsylvania No. 5,	Lackawanna,	Arm fractured while assisting to replace a derailed car.
12	Richard Banks,	Scotch,	Driver,	18	S.	Manville,	Lackawanna,	Injured between car and door.
16	John McDermitt,	Irish,	Miner,	44	M.	Capouse,	Lackawanna,	Arm and leg fractured by fall of top coal.
16	John Pulkamskie,	Pole,	Laborer,	52	M.	Bellevue shaft,	Lackawanna,	Head and face cut by fall of rock.
18	John H. Jones,	American,	Miner,	32	M.	Continental,	Lackawanna,	Ankle dislocated by falling roof.
18	August Smith,	German,	Carpenter,	35	M.	Oxford breaker,	Lackawanna,	These men were engaged in the fire room outside adjusting a wheel. A pipe burst and they were scalded by escaping steam.
18	Ed. O'Malley,	Irish,	Carpenter,	28	S.	Oxford breaker,	Lackawanna,	
26	**John Thomas,**	Welsh,	Runner,	20	S.	Mount Pleasant,	Lackawanna,	Thumb lacerated while spragging a car.
26	Peter Savieskie,	Pole,	Miner,	30	S.	Mount Pleasant,	Lackawanna,	Burned while drying powder in his hat.
28	Torey P. Rich,	Italian,	Laborer,	26	S.	National washery,	Lackawanna,	Leg fractured by frozen culm falling from bank.

March	9	Elias J. Drake,	American,	Miner,	48	M.	Spring Brook,	Lackawanna,	Leg fractured by fall of roof in chamber.
	11	David Roberts,	American,	Driver,	16	S.	Tripp drift,	Lackawanna,	Finger cut off by cars.
	15	James Lloyd,	Welsh,	Door boy,	14	S.	Pyne,	Lackawanna,	Arm severely injured by falling under cars.
	21	Martin Kinlock,	Pole,	Laborer,	37	M.	Dodge,	Lackawanna,	Leg fractured by falling rock.
	19	Jos. Richards,	Welsh,	Door boy,	15	S.	Sloan,	Lackawanna,	Ankle dislocated while trying to board cars.
	27	Wm. Treaton,	English,	Laborer,	27	M.	Continental,	Lackawanna,	Leg fractured by fall of roof.
	26	Geo. Sheams,	American,	Laborer,	26	M.	Bellevue breaker,	Lackawanna,	Arm fractured by a car at the breaker.
April	1	Harry Von Storch,	American,	Laborer,	19	S.	Dickson breaker,	Lackawanna,	Arm fractured by railroad cars.
	1	Patrick Higgins,	Irish,	Miner,	40	M.	Dodge,	Lackawanna,	Squeezed between mine car and rib.
	2	Frank Change,	Pole,	Laborer,	26	M.	Hampton,	Lackawanna,	Back and leg bruised by fall of roof.
	3	Steve Longonce,	Pole,	Laborer,	27	S.	Wm. A,	Lackawanna,	Back injured; fell 10 feet, from one split of the vein to the other.
	3	Wm. Shepherd,	English,	Runner,	20	S.	Hyde Park,	Lackawanna,	Leg fractured by a car inside.
	3	Frank Galunlulski,	Pole,	Laborer,	50	W.	Bellevue shaft,	Lackawanna,	Leg fractured by a fall of coal.
	9	John Smith,	Pole,	Door boy,	16	S.	Dickson,	Lackawanna,	Arm fractured; struck by passing cars.
	10	Ronean Caeitch,	Pole,	Wheelman,	20	S.	Greenwood No. 1,	Lackawanna,	Thumb cut off by cars inside.
	12	John Kleman,	German,	Miner,	61	M.	Mount Pleasant,	Lackawanna,	Leg fractured by falling under a car.
	15	Isaac Marshall,	Irish,	Loader,	53	M.	Oxford,	Lackawanna,	Rib fractured by falling against a car.
	16	Michael Linch,	Irish,	Miner,	45	M.	Mount Pleasant,	Lackawanna,	Head and body bruised by coal from blast.
	18	Thomas McDermott,	American,	Miner,	27	M.	Spring Brook,	Lackawanna,	Cuts and contusions by coal from a blast.
	19	Stephen Howess,	Pole,	Slate picker,	12	S.	Jermyn No. 1,	Lackawanna,	Injured by falling into coal pockets while playing.
	20	Smith O'Shawski,	Pole,	Miner,	34	M.	Greenwood No. 2,	Lackawanna,	Both men were injured by explosion of powder. The result of insufficient care on the part of the miner.
	20	Joseph Greyeshi,	Pole,	Laborer,	27	M.	Greenwood No. 2,	Lackawanna,	
	23	Thos. Kelly,	American,	Miner,	21	S.	Spring Brook,	Lackawanna,	Hip dislocated by fall of roof at face of chamber.
	23	John C. Jones,	American,	Driver boss,	29	M.	Hyde Park,	Lackawanna,	These men were riding on a train of cars inside. The train struck a safety block and the men were injured.
	23	Laughlin McHugh,	American,	Runner,	20	S.	Hyde Park,	Lackawanna,	
	26	James King,	Irish,	Laborer,	37	S.	Bellevue shaft,	Lackawanna,	Slightly injured by a fall of top coal.
	29	John M. Thomas,	Welsh,	Miner,	45	M.	Archbald,	Lackawanna,	Two ribs fractured by a fall of coal.
May	1	Wm. Dolphin,	Irish,	Miner,	38	M.	Bellevue shaft,	Lackawanna,	Slightly injured by an explosion of gas.
	1	John Golden,	Irish,	Laborer,	28	M.	Bellevue shaft,	Lackawanna,	
	1	Benj. Watkins,	American,	Miner,	38	M.	Bellevue shaft,	Lackawanna,	
	1	Thos. H. Jones,	Welsh,	Miner,	35	M.	Tripp slope (Dia.),	Lackawanna,	Knee fractured by fall of roof.
	2	John Golden,	Irish,	Miner,	44	M.	Green Ridge slope,	Lackawanna,	Leg fractured by fall of roof.
	4	John Noozhi,	Pole,	Miner,	42	M.	Bellevue slope,	Lackawanna,	Slightly injured by fall of roof.
	7	Michael O'Holleran,	Irish,	Miner,	41	M.	Greenwood No. 2,	Lackawanna,	Slightly injured by fall of roof.

TABLE V—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
10	Ignatz Wisnieskie,	Pole,	Laborer,	29	S.	Continental,	Lackawanna,	Leg fractured by fall of roof.
20	Jos. Brozinskie,	Pole,	Laborer,	18	S.	Mount Pleasant,	Lackawanna,	Injured by explosion of gas.
24	Frank Webster,	English,	Shaft man,	47	M.	Manville,	Lackawanna,	Injured by descending cage.
25	Jas. Shovlin,	Irish,	Miner,	29	M.	Pine Brook,	Lackawanna,	Injured by coal from blast.
27	Dominick Crane,	Irish,	Driver,	16	S.	Meadow Brook,	Lackawanna,	Leg bruised between the bumpers of mine cars.
29	Henry Jones,	Welsh,	Miner,	54	M.	Bellevue shaft,	Lackawanna,	Slightly injured by fall of coal.
June 3	E. J. Hughes,	American,	Mine foreman,	45	M.	Spencer,	Lackawanna,	Slightly injured by explosion of gas.
3	James Tighe,	American,	Company man,	35	M.	Spencer,	Lackawanna,	
4	John King,	American,	Miner,	29	M.	Nay Aug slope,	Lackawanna,	Leg fractured by fall of roof.
7	Lewis Parry,	Welsh,	Miner,	52	M.	Bellevue shaft,	Lackawanna,	Severely injured by a premature blast.
7	Frank Pollard,	English,	Laborer,	29	M.	Bellevue shaft,	Lackawanna,	
10	Wm. Thrlwell,	American,	Driver,	15	S.	Continental,	Lackawanna,	Injured by cars.
17	Jos. Skiggoritz,	Pole,	Laborer,	42	M.	Dickson,	Lackawanna,	Breast and shoulder injured by fall of roof.
24	Thos. Gallagher,	Irish,	Dump man,	55	S.	Sloan breaker,	Lackawanna,	Slightly injured by cars.
July 9	John Edwards,	Welsh,	Miner,	35	S.	Continental,	Lackawanna,	Back and head injured by fall of roof.
15	Thomas S. Lewis,	Welsh,	Mine foreman,	46	M.	Jermyn No. 1,	Lackawanna,	Leg fractured by a haulage rope breaking.
15	Philip English,	Italian,	Miner,	33	M.	Nay Aug slope,	Lackawanna,	Slightly injured by a fall of coal.
18	Edward Griffiths,	Welsh,	Driver,	17	S.	Central,	Lackawanna,	Collar bone fractured; squeezed between car and mule.
20	Wm. Green,	Welsh,	Miner,	35	M.	Mount Pleasant,	Lackawanna,	Head and body injured by coal from blast.
22	Louis Constant,	Pole,	Laborer,	22	S.	Cayuga,	Lackawanna,	Slightly injured by fall of roof.
26	Powell Gizlell,	Pole,	Miner,	26	M.	West Ridge slope,	Lackawanna,	Injured by coal from blast.
29	Richard Kelly,	Irish,	Miner,	41	M.	Central,	Lackawanna,	Two ribs fractured by fall of rock.
29	Michael Grady,	Irish,	Miner,	48	M.	Mount Pleasant,	Lackawanna,	Leg fractured by coal from blast.
30	Florence Sullivan,	American,	Ticket boy,	15	S.	Archbald breaker,	Lackawanna,	Arm crushed between cars.
Aug. 1	James Barkley,	Irish,	Driver,	18	S.	Taylor shaft,	Lackawanna,	Foot injured by a derailed car.
2	John Heist,	German,	Slate boss,	69	M.	Spring Brook breaker,	Lackawanna,	Shoulder dislocated by falling on schute in breaker.
3	Harry Lisk,	American,	Door boy,	15	S.	Diamond,	Lackawanna,	Two ribs fractured by falling under car.

	5	Mike Posey,	Hungarian,	Laborer,	24	S.	Taylor shaft,	Lackawanna,	Leg fractured by fall of roof.
	5	Stephen Naillet,	Pole,	Miner,	43	M.	Dickson,	Lackawanna,	Injured by exploding gas.
	5	Alex. Mancka,	Pole,	Laborer,	35	M.	Dickson,	Lackawanna,	
	6	Henry Smith,	Welsh,	Laborer,	19	S.	Continental,	Lackawanna,	Ankle bruised by coal rolling from schute.
	15	Rice Prosser,	Welsh,	Engineer,	47	M.	Dodge,	Lackawanna,	Thigh fractured by pumping machinery.
	17	Carl Burcth,	Italian,	Miner,	22	S.	Old Forge No. 1,	Lackawanna,	Slightly injured by fall of roof.
	17	Patrick Reap,	American,	Footman,	20	S.	Cayuga,	Lackawanna,	Arm dislocated by cars.
	19	John Counces,	Irish,	Miner,	40	M.	Bellevue shaft,	Lackawanna,	Leg fractured by fall of roof.
	22	Patrick McGrath,	Irish,	Laborer,	46	M.	Pennsylvania No. 5,	Lackawanna,	Leg fractured by fall of roof.
	23	David Gould,	Welsh,	Miner,	49	M.	Archbald,	Lackawanna,	Slightly injured by fall of roof.
	22	Jonathan Davies,	American,	Door boy,	15	S.	Central,	Lackawanna,	Flesh wound on leg by cars.
	24	John Pioper,	American,	Mechanic,	25	M.	Archbald,	Lackawanna,	Leg cut off in a collission of mine cars.
	26	Matthew Knight,	Irish,	Miner,	36	M.	Hyde Park,	Lackawanna,	Ribs fractured and knee injured by fall of rock.
	27	Wm. Edwards,	Welsh,	Laborer,	41	M.	Oxford,	Lackawanna,	Injured by fall of roof.
Sept.	5	Frank Bostick,	Pole,	Laborer,	30	M.	Archbald,	Lackawanna,	Slightly cut on head by fall of rock.
	14	Fred. Liency,	English,	Carpenter,	50	M.	Dodge breaker,	Lackawanna,	Shoulder dislocated by a fall.
	16	Michael Rooney,	Irish,	Miner,	35	M.	Pine Brook,	Lackawanna,	Both men were burned, the result of handling powder in a careless manner.
	16	Thos. Golboy,	Irish,	Laborer,	42	M.	Pine Brook,	Lackawanna,	
	18	Fred. Betz,	German,	Footman,	36	M.	Sloan,	Lackawanna,	Foot injured by cars.
	20	Andrew Haskett,	Pole,	Driver,	18	S.	Mount Pleasant,	Lackawanna,	Hand injured by cars.
	21	Michael Sopp,	Slav,	Miner,	27	M.	Jermyn No. 2,	Lackawanna,	Back injured by fall of roof.
	23	Wm. Beckman,	German,	Miner,	27	M.	Pennsylvania No. 5,	Lackawanna,	Hands and face burned by handling powder in a careless manner.
	25	Martin Sacol,	Pole,	Miner,	46	S.	Old Forge No. 2,	Lackawanna,	Leg fractured by fall of roof.
	27	Carl Goodie,	Slav,	Driver,	14	S.	Wm. A,	Lackawanna,	Leg severely injured by a car.
	25	John Morgan,	Welsh,	Wheel man,	30	M.	Pine Brook,	Lackawanna,	Painfully injured between car and rib.
	30	Thos. Berge,	English,	Miner,	38	M.	Continental,	Lackawanna,	Back bruised by fall of bony coal.
Oct.	2	Michael Miller,	Slav,	Slate picker,	40	M.	Dickson breaker,	Lackawanna,	Foot cut off in breaker machinery.
	3	John Mack,	American,	Carpenter,	46	M.	Cayuga breaker,	Lackawanna,	Foot injured by stepping on a rail.
	4	Michael Cannon,	Irish,	Miner,	35	S.	Brisbin,	Lackawanna,	Ankle dislocated by fall of roof.
	5	C. D. Belles,	American,	Carpenter,	33	M.	Lawrence breaker,	Lackawanna,	Fell from trestle and fractured ribs.
	12	Thomas James,	Welsh,	Foot man,	25	S.	Oxford,	Lackawanna,	Struck by an iron rail.
	16	John Rohan,	Pole,	Laborer,	34	M.	Continental,	Lackawanna,	Leg fractured by fall of roof.
	16	John Pany,	English,	Track layer,	48	M.	Continental,	Lackawanna,	Bruised in a collision on inside plane.
	17	Stanley Frickocki,	Pole,	Laborer,	33	S.	Continental,	Lackawanna,	Hip dislocated while replacing car on track.
	19	Andrew Brown,	American,	Picker tender,	13	S.	Brisbin breaker,	Lackawanna,	Both legs fractured by conveyor line.
	19	Josef Rowanoskie,	Pole,	Laborer,	32	S.	Central,	Lackawanna,	Injured; a drill fell on his foot.
	21	Wm. C. Powell,	Welsh,	Fire boss,	48	M.	Tripp shaft,	Lackawanna,	Leg fractured by haulage rope.
	21	Richard Conolly,	American,	Laborer,	20	S.	Taylor shaft,	Lackawanna,	Back painfully injured by fall of roof.
	21	Stephen Evers,	American,	Miner,	27	M.	Continental,	Lackawanna,	Cut on wrist by fall of rock.
	21	Edward Walsh,	Irish,	Driver,	16	S.	Mount Pleasant,	Lackawanna,	Hands and face burned by powder.
	28	James Jones,	Welsh,	Miner,	38	M.	Central,	Lackawanna,	Injured by a fall of roof.
	28	Stanley Pricket,	Pole,	Laborer,	17	S.	Archbald,	Lackawanna,	Injured by cars.

TABLE V—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
	25	Thos. Roberts,	Welsh,	Miner,	27	S.	Continental,	Lackawanna,	Three ribs fractured by a fall of roof.
	31	Emilio Gentile,	Italian,	Laborer,	24	S.	Sibley,	Lackawanna,	Leg fractured by a fall of roof.
	31	Edward Ford,	Irish,	Driver,	17	S.	Oxford shaft,	Lackawanna,	Struck by iron rail while taking it off a carriage.
Nov.	2	Robert H. Nicholson,	American,	Oiler,	30	S.	Capouse,	Lackawanna,	Nose fractured by a kick from a mule.
	11	Valentine O'Malia,	Irish,	Laborer,	35	S.	Greenwood No. 12 drift,	Lackawanna,	Hand cut off and otherwise injured by explosion of dynamite.
	11	Patrick Hughes,	Irish,	Driver,	15	S.	Greenwood No. 1 breaker,	Lackawanna,	Arm cut off by falling under a car.
	12	John Cozue,	Irish,	Miner,	48	M.	Hyde Park,	Lackawanna,	Slightly injured by fall of roof.
	15	Bronick O'Ponick,	Pole,	Laborer,	20	S.	Greenwood No. 1,	Lackawanna,	Leg fractured by cars.
	15	Henry Burgess,	English,	Miner,	30	M.	Capouse,	Lackawanna,	Slightly injured by fall of rock.
	15	Anthony Pendered,	English,	Laborer,	24	S.	Capouse,	Lackawanna,	Slightly injured by a fall of roof.
	19	Thomas Davies,	American,	Miner,	23	S.	Mount Pleasant,	Lackawanna,	Slightly injured by an explosion of gas.
	19	Reese Thomas,	Welsh,	Miner,	42	S.	Mount Pleasant,	Lackawanna,	
	20	David Williams,	American,	Driver,	21	S.	Bellevue slope,	Lackawanna,	Skull fractured and shoulder dislocated; struck by a pole.
	22	Chas. Olshock,	Pole,	Laborer,	36	M.	Capouse,	Lackawanna,	Injured by fall of roof.
	21	Andrew Gawassy,	Pole,	Laborer,	23	S.	Continental,	Lackawanna,	Leg fractured by fall of roof.
	25	Alex. Long,	Italian,	Slate picker,	56	M.	Mt. Pleasant washery,	Lackawanna,	Flesh wound in breaker machinery.
	25	Geo. Winkle,	American,	Driver,	15	S.	Pine Brook,	Lackawanna,	Leg fractured by falling under car.
	26	James Lancaster,	English,	Miner,	46	M.	West Ridge slope,	Lackawanna,	Burned by the careless use of powder.
	26	John Hayes,	American,	Miner,	32	M.	Continental,	Lackawanna,	Severely bruised by fall of roof.
	26	Stephen Brush,	German,	Driver,	18	S.	Old Forge No. 1,	Lackawanna,	Leg fractured by cars inside.
	26	Andrew Standurozkie,	Pole,	Miner,	35	M.	Bellevue slope,	Lackawanna,	Back, hip and thigh injured by fall of roof.
	30	Michael Costello,	Irish,	Miner,	25	S.	Capouse,	Lackawanna,	Leg fractured by fall of roof at face of chamber.
Dec.	1	Chas. Young,	American,	Driver,	20	S.	Pyne,	Lackawanna,	Arm fractured by cars inside.
	2	Pat McNally,	Irish,	Miner,	47	M.	Greenwood No. 1,	Lackawanna,	McNally was injured internally and Koromcavish's thigh was fractured by fall of roof.
	2	Dominick Kosomcavich,	Pole,	Laborer,	34	M.	Greenwood No. 1,	Lackawanna,	

2	Dan'l J. Hill,	American,	Carpenter,	36	M.	Holden breaker,	Lackawanna,	Fell from the breaker and severely bruised.
3	John Elert,	American,	Driver,	18	S.	Taylor shaft,	Lackawanna,	Both legs fractured in a collision of cars.
6	Alex. Boken,	Pole,	Miner,	28	S.	Brisbin,	Lackawanna,	Slightly injured by fall of roof.
6	Nick Sossong,	American,	Runner,	19	S.	William A,	Lackawanna,	Slightly injured by cars.
6	Patk. McPeeke, Jr.,	American,	Miner,	23	S.	Old Forge No. 2,	Lackawanna,	Back and shoulder injured by fall of roof.
9	Alex. Gusseli,	Pole,	Driver,	17	S.	Sloan,	Lackawanna,	Leg fractured and collar bone injured by cars.
10	Geo. Dooncy,	German,	Miner,	45	M.	Pyne,	Lackawanna,	Leg fractured by a fall of roof.
11	John Coshken,	Lithuanian,	Laborer,	26	S.	Dickson,	Lackawanna,	Back painfully injured by fall of roof.
11	John Williams,	Pole,	Miner,	48	M.	Mount Pleasant,	Lackawanna,	Slightly burned on hands and face by gas.
14	Martin Melvin,	American,	Slate picker,	14	S.	Gibbons breaker,	Lackawanna,	Severely injured in revolving screen.
26	George Kohler,	German,	Driver,	16	S.	Archbald,	Lackawanna,	Leg fractured by cars.
28	Michael Widder,	Greek,	Ashman,	40	M.	Bellevue breaker,	Lackawanna,	Scalded by escaping steam from a broken boiler.
28	Thomas James,	American,	Driver,	20	S.	Hampton,	Lackawanna,	Head and back injured by fall of roof.
28	Thomas Richard,	Welsh,	Miner,	64	M.	Hampton,	Lackawanna,	Foot injured by fall of rock.
28	Martin McNamara,	American,	Company man,	24	S.	Von Storch slope,	Lackawanna,	Head cut by mine car.
30	Tim Rafferty,	Irish,	Runner,	24	S.	Sibley,	Lackawanna,	Leg fractured by being squeezed between car and mule.

Third Anthracite District.

LUZERNE AND SULLIVAN COUNTIES.

Pittston, February 24, 1902.

Hon. James W. Latta, Secretary of Internal Affairs, Harrisburg, Pa.:

Sir: I have the honor of herewith submitting my annual report as Inspector of Coal Mines for the Third Anthracite District for the year 1901. It contains the usual tabular statements of mine accidents, the number of each class of employes, quantity of coal produced and other useful memoranda.

There were 6,925,598 tons of coal produced, being 628,667 tons more than the production of the preceding year.

Eighty-four fatal accidents occurred, which is twenty-five more than for 1900.

The number of non-fatal accidents was 173, being an increase of thirty-four over the year 1900.

Forty-two wives were made widows and eighty-nine children under fourteen years of age were left fatherless.

The average number of days worked was 173.25. The production per day was 40,500 tons; 82,399 tons were produced per life lost, and 40,032 tons for each non-fatal accidents.

Very respectfully,
H. McDONALD,
Inspector of Mines.

Total Production of Coal in Tons During the Year 1901.

Pennsylvania Coal Company,	1,674,490.05
Lehigh Valley Coal Company,	1,420,477.19
Hillside Coal and Iron Company,	443,939.11
Delaware, Lackawanna and Western Railroad Company,	408,090.02
Temple Iron Company,	622,561.10
Delaware and Hudson Company,	285,151.15
Seneca Coal Company,	307,575.06
John C. Haddock,	112,398.02

Clear Spring Coal Company,	261,897.01
Florence Coal Company, Limited,	11,433.08
W. G. Payne & Co.,	162,788.02
Traders' Coal Company,	91,208.06
Avoca Coal Company,	86,972.14
Robertson and Law,	78,712.00
Raub Coal Company,	108,427.14
Algonquin Coal Company,	275,590.02
Laurel Run Coal Company,	77,893.03
Stevens Coal Company,	169,819.06
Gardner Creek Coal Company,	18,130.11
Wyoming Coal and Land Company,	108,621.03
State Line and Sullivan Railroad Company,	65,353.15
W. B. Gunton,	70,812.10
Wm. Richmond,	16,636.06
Hicks River Coal Company,	5,148.00
Warnke Coal Company,	26,549.04
North American Coal Company,	4,965.00
Crescent Coal Company,	9,955.12
Total,	6,925,598.08

The Total Production was Made up as Follows.

Shipped to market by railroad,	6,315,420.15
Sold at mines for local use,	137,965.13
Consumed to generate steam at mines,	472,212.00
Total,	6,925,598.08

TABLE A—Showing the Number of Lives Lost, Tons of Coal Produced per Life Lost and per Person Injured, Number of Employes and Number of Employes per Life Lost and per Person Injured in the Year 1901.

Names of Operators.	Number of lives lost.	Tons of coal produced per life lost.	Number of persons severely injured.	Tons of coal produced per person severely injured.	Number of persons employed.	Number of employes per life lost.	Number of employes per person severely injured.
Pennsylvania Coal Co.,	16	104,655	33	50,742	4,276	267	129
Lehigh Valley Coal Co.,	18	78,915	36	39,457	2,756	153	76
Hillside Coal and Iron Co.,	5	88,787	10	44,393	1,499	299	149
Delaware, Lack'a and West. R. R. Co.,	2	204,045	14	29,149	1,006	503	71
Temple Iron Co.,	9	69,173	19	32,766	1,3[illegible]6	149	71
Delaware and Hudson Co.,	5	81,618	12	34,007	1,038	207	86
Seneca Coal Co.,	4	76,893	....	....	767	191	....
John C. Haddock,	1	112,398	4	28,099	301	301	75
Clear Spring Coal Co.,	3	87,299	1	261,897	658	219	261,897
Florence Coal Co., Limited,	....	....	1	11,433	....	....	11,433
W. G. Payne & Co.,	1	162,788	8	20,348	481	481	60
Traders' Coal Co.,	5	18,241	3	30,420	330	66	110
Avoca Coal Co.,	1	86,972	2	43,486	367	367	183
Robertson & Law,	....	....	1	78,712	194	....	194
Raub Coal Co., Limited,	1	108,427	4	27,106	360	360	90
Algonquin Coal Co.,	3	91,896	5	55,138	674	224	134
Laurel Run Coal Co.,	5	15,578	3	25,964	354	70	118
Stevens Coal Co.,	2	84,909	14	12,129	393	196	28
North American Coal Co.,	....	....	....	....	....	....	....
Wyoming Coal and Land Co.,	3	36,207	1	108,621	212	70	212
State Line and Sullivan Railroad Co.,	....	....	1	65,353	233	....	233
W. B. Gunton,	....	....	....	....	201	....	....
Wm. Richmond,	....	....	....	....	104	....	....
Hicks River Coal Co.,	....	....	1	5,148	37	....	37
Warnke Coal Co.,	....	....	....	....	25	....	....
Gardner Creek Coal Co.,	....	....	....	....	....	....	....
Crescent Coal Co.,	....	....	....	....	22	....	....
Total,	84	82,399	173	40,032	17,654	210	102

TABLE B—Classification of fatal accidents for the year.

	Causes of Fatal Accidents.								
	Smothered by gases.	By explosion of gas.	By falling down shafts.	By falls of roof and coal.	By mine cars underground.	By explosions of powder and blasts.	By miscellaneous causes, inside.	By miscellaneous causes on surface.	Total.
January,	3	....	....	5	2	1	....	....	11
February,	....	....	....	3	....	....	1	1	5
March,	....	....	....	6	1	1	1	....	9
April,	....	1	1	3	....	1	1	....	7
May,	....	....	....	6	2	....	....	2	10
June,	....	1	....	....	....	1	....	....	2
July,	....	....	....	....	....	2	....	....	2
August,	....	....	....	5	1	1	....	2	9
September,	....	1	3	2	....	2	1	....	9
October,	....	2	....	5	1	....	....	....	8
November,	....	1	....	1	....	1	....	....	3
December,	....	....	....	3	1	....	....	5	9
Total,	3	6	4	39	8	10	4	10	84

	Occupation of Person Killed or Fatally Injured.									
	Mine foreman and fire bosses.	Miners.	Laborers.	Runners.	Driver boss and drivers.	Door tenders.	Head and foot man.	Miscellaneous, inside.	Miscellaneous, outside.	Total.
January,	3	4	2	....	1	1	....	....	....	11
February,	....	2	2	....	....	....	....	....	1	5
March,	....	5	4	...	....	....	....	....	....	9
April,	....	3	3	....	1	....	....	....	....	7
May,	....	2	3	1	1	....	1	....	2	10
June,	....	1	1	....	....	....	....	....	....	2
July,	....	2	....	....	....	....	....	....	....	2
August,	....	3	3	....	1	....	....	....	2	9
September,	....	2	4	....	1	....	....	2	....	9
October,	....	1	4	1	1	....	....	1	....	8
November,	....	2	1	....	....	....	....	....	....	3
December,	....	....	2	1	1	....	....	....	5	9
Total,	3	27	29	3	7	1	1	3	10	84

	Nationality of Persons Killed or Fatally Injured.											
	Americans.	English.	Welsh.	Scotch.	Irish.	Poles.	Slav.	Germans.	Austrians.	Italians.	Lithuanians.	Total.
January,	3	....	2	....	3	....	....	....	....	3	....	11
February,	1	....	....	....	2	....	2	....	....	....	....	5
March,	1	....	1	....	....	4	1	1	....	1	....	9
April,	2	....	....	....	....	5	....	....	....	....	....	7
May,	2	....	1	....	2	1	1	....	....	2	1	10
June,	....	....	....	1	....	1	....	....	....	....	....	2
July,	....	....	....	....	....	1	1	....	....	....	....	2
August,	2	....	....	....	....	6	....	....	....	....	1	9
September,	2	1	....	....	2	4	....	....	....	....	....	9
October,	2	....	....	....	....	5	....	....	1	....	....	8
November,	....	....	....	....	1	1	1	....	....	....	....	3
December,	3	....	....	....	1	3	....	....	1	1	....	9
Total,	18	1	4	1	11	31	6	1	2	7	2	84

Widows, 42; orphans, 89.

TABLE C—Classification of non-fatal accidents for the year.

	Causes of Non-Fatal Accidents.						
	Explosions of gas.	Falls of roof and coal.	By mine cars.	Explosions of powder and blasts.	Miscellaneous, inside.	Miscellaneous, outside.	Total.
January,	4	4	2	2	1	....	13
February,	2	6	4	....	2	....	14
March,	....	3	4	2	1	2	12
April,	2	4	2	3	1	2	14
May,	....	3	5	5	1	....	14
June,	....	1	2	3	1	1	8
July,	5	2	4	....	1	....	12
August,	2	9	3	1	2	4	21
September,	2	4	4	1	1	....	12
October,	....	4	2	3	5	2	16
November,	7	5	3	3	3	2	23
December,	5	5	1	1	1	1	14
Total,	29	50	36	24	20	14	173

	Occupation of Persons Severely Injured.												
	Mine foreman and fire bosses.	Timber and brattice men.	Miners.	Laborers.	Head and foot men.	Company men.	Track layers.	Runners.	Drivers.	Door boys.	Miscellaneous, inside.	Miscellaneous, outside.	Total.
January,	1	....	6	5	....	....	....	....	1	....	....	....	13
February,	1	....	5	4	....	....	....	....	4	....	....	....	14
March,	....	....	3	4	....	....	....	....	3	1	....	1	12
April,	....	....	6	3	....	1	....	....	3	....	....	1	14
May,	....	....	4	3	1	....	1	2	3	....	....	....	14
June,	....	....	3	2	1	....	....	....	....	1	....	1	8
July,	....	....	2	3	....	....	....	2	3	2	....	....	12
August,	....	1	8	2	....	....	....	5	....	1	....	4	21
September,	....	....	6	2	1	....	....	....	2	1	....	....	12
October,	....	....	7	2	....	....	....	1	4	....	....	2	16
November,	1	....	10	5	1	....	....	....	3	1	1	1	23
December,	....	....	8	2	....	1	....	....	2	....	....	1	14
Total,	3	1	68	37	4	2	1	10	28	7	1	11	173

	Nationality of Persons Severely Injured.													
	Americans.	Welsh.	Irish.	English.	Scotch.	Poles.	Slavs.	Germans.	Austrians.	Italians.	Hungarians.	Lithuanians.	Russians.	Total.
January,	1	1	3	2	....	3	....	....	....	1	....	2	....	13
February,	4	1	2	....	1	2	1	....	....	1	....	....	2	14
March,	4	2	....	1	....	3	1	....	....	....	1	....	....	12
April,	6	1	....	....	....	4	2	1	....	....	....	....	....	14
May,	3	1	4	....	....	1	3	....	....	1	1	....	....	14
June,	3	1	1	....	....	....	....	....	1	....	1	1	....	8
July,	5	1	....	1	....	....	3	1	....	....	1	....	....	12
August,	10	1	....	1	....	1	5	1	....	....	....	2	....	21
September,	2	1	1	2	....	3	2	....	1	....	....	....	....	12
October,	4	....	2	....	1	3	4	1	....	....	....	1	....	16
November,	4	1	6	....	....	10	....	1	....	....	....	1	....	23
December,	1	....	3	2	....	4	2	....	....	1	....	....	1	14
Total,	47	11	22	9	2	34	23	5	2	4	4	7	3	173

TABLE D—Showing the method and state of ventilation in all the collieries operated in the Third Anthracite District for the year ending December 31, 1901.

	Number of fans.	Diameter of fans—feet.	Revolutions per minute.	Water guage reading at or near fan—inches.	Number of air currents or splits.	Persons employed in the mines.	Cubic feet of air at the inlet.	Cubic feet of air at the face of workings.	Cubic feet of air at the outlet.
Barnum No. 1,	1	17	64	1	4	79	44,700	43,500	46,900
Barnum No. 2,	1	17	62	1	4	118	80,000	60,500	90,000
Barnum No. 3,	1	17	76	1	4	217	71,900	70,400	73,600
No. 13 shaft,	1	20	50	6-10	3	174	75,400	63,600	89,000
Laws shaft,	1	20	63	1	4	160	93,000	76,000	109,000
No. 1 shaft,	1	20	50	8-10	4	141	78,870	65,430	81,000
No. 8 shaft,	1	20	46	9-10	3	139	84,140	72,540	87,000
No. 4 shaft,	1	20	60	1	7	186	94,300	76,750	100,000
		17	71	6-10	....	....	....	....	....
No. 5 shaft,	2	20	65	5-10	7	174	92,400	82,400	102,400
No. 6 shaft,	1	20	60	1	7	168	80,600	64,000	87,900
		17	65	1	....	....	....	....	....
No. 11 shaft,	2	20	58	1	6	206	108,860	95,610	115,230
No. 9 shaft,	1	20	63	1	5	180	92,420	77,975	98,115
No. 10 and 10 Jr. shaft,	1	20	65	1	4	190	64,300	52,300	68,900
No. 7 shaft,	1	20	60	1	4	176	74,570	60,950	81,730
Hoyte shaft,	2	20	73	1.1-10	8	244	148,140	133,340	160,820
No. 14 shaft,*	1	20	65	1.5-10	8	....	....	....	....
No. 14 tunnel,*	1	17	50	8-10	5	....	....	....	....
		30	52	2	....	....	....	....	....
Prospect shaft,	2	30	51	2	10	322	107,200	95,400	121,400
Midvale slope,	1	18	68	1.5-10	6	120	77,310	55,950	85,410
Oakwood shaft,	1	30	51	2.1-10	9	120	59,980	57,285	59,967
		15	80	9-10	....	....	....	....	....
Hillman slope,	2	15	80	9-10	3	121	77,706	47,120	91,325
Wyoming shaft,	1	25	45	8-10	6	119	108,720	90,280	109,950
Henry shaft,	1	30	42	1.2-10	9	245	124,401	83,464	126,212
Maltby shaft,†	1	25	76	2.5-10	9	....	....	....	....
Maltby slope †	1	12	75	1	2	....	....	....	....
		20	60	7-10	....	....	....	....	....
Exeter No. 1 shaft,	2	22	60	1	5	161	146,570	88,200	171,200
		20	60	1.3-10	....	....	....	....	....
Exeter No. 2 shaft,	2	20	60	1.3-10	3	164	74,314	48,296	98,576

Heidelberg slope,	1	16	75	7-10	3	142	46,798	28,618	59,092
Heidelberg shaft,	1	20	60	7-10	3	154	75,500	63,000	79,800
Mineral Spring slope,‡	... .	....	....	....	....	....	....	....	....
Columbia shaft,	1	20	70	....	5	157	79,958	66,625	87,931
Twin No. 1 shaft,	2	20 20	60 60	7-10 7-10	5	164	101,000	80,300	112,300
Twin No. 2 shaft,	1	20	60	8-10	6	304	130,350	111,300	132,800
Delaware shaft,	2	22½ 22½	70 60	1.1-10 1	8	248	92,950	66,905	97,300
Laflin shaft,	1	16	100	4-10	4	145	50,800	47,300	54,475
Langcliffe shaft,	1	18	98	1.1-10	7	221	89,400	62,850	91,600
Pettebone shaft,	1	35	54	....	6	260	145,450	113,740	187,500
Hallstead shaft,	2	15 18	 108	....	3	124	96,300	42,800	102,600
Avoca shaft,	1	12	60	....	5	208	74,000	46,000	78,900
Laurel Run slope,	2	20 17	75 88	1.3-10 1.5-10	10	163	70,690	52 010	90,730
Pine Ridge shaft,	1	18	70	....	9	260	145,200	84,310	150,100
Katy Did slope,	1	15	70	1	3	104	42,000	28,560	41,600
Fernwood shaft,	1	13	90	8-10	3	197	57,230	52,900	61,860
Fernwood tunnel,	Furnace.	....	....	....	2	25	15,000	8,260	16,310
Butler shaft,	1	15	65	5-10	2	72	28,025	20,500	30,415
Butler tunnel,	Natural.	....	... .	....	2	31	10,580	8,725	11,315
East Boston shaft,	2	25 25	74 78	2½ 2½	9	244	151,150	109,080	152,900
Clear Spring shaft,	2	20 25	60 62	6.10 1½	6	525	180,510	130,670	190,000
Ridgewood slope,	1	16	60	6.10	4	154	78,045	65,825	82,035
Stevens slope,	1	20	65	1.2-10	4	169	71,690	68,960	80,630
Stevens shaft,	1	20	60	1	2	106	50,125	30,945	52,400
Bernice drift,	1	6	260	1½	3	98	32,000	21,550	36,401
Griffith tunnel,	1	12	110	1½	5	114	65,020	29,060	67,710
Chapman shaft,	1	17	65	1	3	140	52,700	35,500	53,325
Harry E shaft,	2	20 16	86 90	.... 1.6-10	6	390	160,785	147,195	164,630
Forty Fort shaft,	1	20	78	1.8-10	5	168	110,820	62,540	115,205
Mt. Lookout shaft,	2	17 20	80 74	.... 2.5-10	6	307	109,660	102,440	110,050
Black Diamond shaft,	1	20	90	2	5	148	88,000	29,200	104,950
Gardner Creek slope,	1	15	85	7-10	3	Idle.	48,200	30,645	55,685
Louise slope,	1	20	55	7.10	4	131	65,000	48,210	70,100
Babylon shaft,	1	20	85	1½	3	126	69,800	60,000	70,341
Babylon slope,	1	12	80	1	2	132	58,318	51,390	59,549
Elmwood No. 1 shaft,	1	17	80	9.10	2	Idle.	48,215	30,618	51,310
Elmwood No. 2 shaft,	1	17	60	1	2	Idle.	54,628	42,460	58,720
Langcliffe tunnel,	Natural.	....	....	....	2	22	15,840	12,916	16,410
Crescent tunnel,	Furnace.	....	....	....	2	10	20,400	15,225	21,310
Consolidated slope,	1	17	75	8-10	4	255	70,710	60,073	76,991
Consolidated shaft,	1	15	65	6.10	2	128	31,696	30,818	42 565
Morning Star,	Natural.	....	....	....	1	24	11,860	9,756	12,000
Yatesville tunnel,	Furnace.	....	....	....	2	72	17,192	15,910	19,205
Lykens drift,	Furnace.	....	....	....	3	99	17,420	14,390	20,980

*Idle: breaker burned.

†Idle; on strike.

‡Ventilation not put in order as yet.

Delaware Mine Fire.

The fire which took place in the Cooper or Top split of the Baltimore vein Delaware shaft located at Hudson, December 13, 1900, mention of which was made in my last report, was successfully extinguished as far as any indications can be discovered by daily examinations of the surrounding territory, by flushing the mine with culm, and the colliery resumed operations in the later part of June, 1902, after being idle for six months. Too much credit cannot be given to those who had charge of the undertaking, and likewise to all the workingmen for their persistency in overcoming all the obstacles which were many, as the main roof was crushing and the pillars giving way on the main road to the shaft, and while there was another way for escape, it was such an inconvenient way to bring in supplies, that the main gangway was timbered for a half mile by which they succeeded in holding the gangway open. While this state of affairs prevailed the air current to some extent was destroyed, and the surrounding old workings became filled with the damp from the fire, and between the Laurel Run slope workings east of the fire, a large body of explosive gas had accumulated in the old workings, causing grave apprehension in the minds of all, of the roof caving and forcing the body of explosive gas back on the fire and causing an explosion, therefore on December 29, 1900, I sent the following notice to David J. Williams, inside foreman of Laurel Run colliery.

Pittston, Pa., December 29, 1900.

Mr. David J. Williams, Mine Foreman, Laurel Run Colliery, Parsons, Pa.:

Dear Sir: Please keep all the workmen of Laurel Run colliery out of the mines, as I understand that explosive gas has accumulated to an alarming extent between the inside workings of your mine and the fire in the Delaware workings, until you hear from me.

I am truly yours,
H. McDONALD,
Inspector of Mines.

I would here state that I was at the Delaware colliery on the 29th of December, 1900, and ordered the men out by telephone at 9 A. M., which order was immediately complied with, and when I went to my office, I sent the above notice which I understand Mr. Williams showed to some of the officials, who advised him to keep out of the mine.

While Laurel Run mine was shut down and the men who were fighting the fire had been driven back on account of lack of pure air, a consultation was held and it was decided to close the intake of the Laurel Run mine and connect both ventilating fans on the Delaware workings, as by stopping the Delaware fan they found that the workmen could approach the fire and proceed again with the work of cutting around it.

On the morning of January 3, 1901, David J. Williams, mine boss and William Morgan, Martin Fortune and Wm. Earley, fire bosses of Laurel Run colliery went into the mine about 9 A. M., in company with a rock contractor, by the manway and descended to the Checker vein inside slope to locate a rock shaft which is as I understand to be sunk to Red Ash vein. After the contractor went out the above four men went down to the third lift to make an examination, and proceeded through some of the workings which were the returns from the fire, and when they found that they were so badly affected by damp they turned to go back and had reached the slope when they all fell, with the exception of Williams who started up the slope for help but failed to reach the top. Towards evening the outside foreman, Seaman Stucker became alarmed and sent for some of the workmen to look for them. When they were found about 9 P. M., Williams and Morgan were dead, Fortune and Earley after considerable exertion by the doctors were restored to consciousness in a few hours. Fortune died on the 10th of January, from the effects, but Earley fully recovered. What induced Mr. Williams to go into the mine after having been ordered to keep out is hard to say, as he was naturally bright and had filled the position of mine foreman for years before for other companies.

Burning of No. 14 Breaker.

On February 18, 1901, the large No. 14 Breaker of the Pennsylvania Coal Company located in Jenkins township, caught fire and was burned to the ground, and the employes were idle for some time until room in the other collieries of the company could be made for them. A new breaker has been built and the machinery is now being installed, with expectation of commencing to prepare coal by April 1, of this year. The breaker has a capacity of 3,000 tons per day and will have all the latest improved machinery. A new washery has been built in connection with the breaker to prepare all the refuse from it.

In January, 1901, the large "Babylon breaker" and washery of the Temple Iron Company were destroyed by fire. How it originated remains a mystery; the colliery has been idle since, the company having declined to rebuild. All the coal will be taken to the Lawrence breaker for preparation for market as soon as roads are built.

Improvements by the Lehigh Valley Coal Company During the Year 1901.

Prospect Colliery...The Prospect shaft was completed to the Red Ash vein and the hosting engines have been equipped with spools for winding flat ropes five-eight inches thick by six inches wide. These ropes are now in service and giving great satisfaction.

A rock tunnel was driven from the Baltimore vein to the Five foot, a distance of 488 feet. The vein was found in good condition and about five feet thick. The second opening for this tunnel is a rock plane on a pitch of thirty degrees. The total length of which is 199 feet. At the end of the year a connection was made in the coal from the plane to the tunnel.

In the above colliery a tunnel has been driven through the fault at the fourth lift of the Midvale Hillman slope which enables the company to concentrate all the transportation from the lower levels of the Midvale slope at one point.

At the Prospect Hillman slope a fire was discovered in the airway of the proving slope Hillman vein, on the 12th of April, which was caused by a gas feeder becoming ignited from a Bratticeman's lamp. The fire was fought for some hours but it was found that gas was accumulating inside of the location of the fire. It was therefore decided to fill the slope with water which was promptly done and the fire was extinguished.

During the year it was decided by the Lehigh Valley Coal Company to reopen the Mineral Spring Colliery which has been shut down since 1889, and work was commenced sinking two shafts to the Red Ash vein. The old Baltimore slope has been reopened to the third lift and preparations are being made for sinking a slope in the Checker vein to open up the coal to the north. A ventilating fan has been erected which will ventilate this slope.

The Coal Brook slope which has been idle since 1889, is being put in condition. The water has been pumped out and the gangways are being put in order for mining coal. The foundation for a new breaker has been constructed and the foundation for a 1,000 horse power boiler plant of the Babcock and Wilcox type, has been completed.

The Henry breaker has been converted into a washery and is now being operated as such. Two shafts have been commenced from the surface to reach the Red Ash vein, which are being sunk through a large pillar left in the Baltimore vein for that purpose. The idea being that all veins under the Baltimore, shall be mined without any connection with the overlying seams. Both of these shafts were down to the rock, and about twenty-five feet into the solid rock at the end of the year, and the concrete cribbing was completed. The cribbing is forty-five feet in depth.

A rock tunnel has been driven from the Upper to Lower Baltimore vein in the north workings of the Henry colliery. The total length of which is 569 feet. The second opening for this tunnel is a shaft from the Upper to Lower Baltimore vein, forty-one feet in depth.

During the year connection has been made through the Barrier pillar between the Henry and Wyoming collieries in the Baltimore vein, so that each shaft will act as a second opening for the other colliery in case of an emergency.

The old Mountain tunnel of the Maltby colliery was reopened in 1900, and during the year a second opening, which is a tunnel on an elevation of about 200 feet vertically lower than the Mountain tunnel, was driven from the Four Foot vein which cut all of the veins developed by the Mountain tunnel, a distance of 593 feet, at which point work was stopped, it not yet having reached the Red Ash vein.

Examination of Mine Foremen.

The annual examination of applicants for certificates of qualification for mine foreman and assistant mine foreman was held in this district on the 4th, 5th and 6th of June, 1901, at the rooms of Y. M. C. A., Pittston, Pa. The board of examiners was, H. McDonald, Mine Inspector; J. L. Carke, superintendent and John J. Morahan and David P. Williams, miners. Twenty applicants for mine foreman certificates were examined, and the followнig named were recommended to the Secretary of Internal Affairs for certicates: Henry Campbell and Oscar Alpaugh, of Pittston; Joseph F. Routledge Inkerman, Seward Putton, Anthony J. Healey, Wm. J. Kane, John F. Gilhooly and George A. Davies, of Avoca; John McCutcheon, Old Forge; James Frail, Coalridge; David S. Morris, Luzerne borough; Robert C. Wallice, Parsons, and Wm. E. Johnson, Bernice.

The following named received certificates of qualification for assistant mine foreman: John V. James, Henry H. Hughes and Chas. Pyne, Wyoming; John T. O. Boyle, Thos. H. Barrett, Maltby; Archie Ramage, Gwilym Evans, Chas. M. Williams, Christian Henzelmann, John Grubitz, Andro Sholtis, John H. King, Michael J. Egan, Pittston; John E. Earley, John J. Moore, Wm. J. Morgan, Walter J. Hutchings, Ebenezer Davis, Daniel J. Thomas, and John P. Mitchell, Avoca; Wm. Pattison, Ridgewood; Jas. J. Boyle, David J. Thomas, Plains; Wm. A. Piper, Edward J. Carlin, Luzerne; Wm. Gardner, Albert Harris, Parsons; Henry Nothoff, Wilkes-Barre, and Lewis S. Smith, Plainsville.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Third Anthracite District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Pennsylvania Coal Co.						
Barnum No. 1 shaft,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Barnum No. 2 shaft,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Barnum No. 3 shaft,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Shaft No. 13,	Lackawanna,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Laws shaft,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Shaft No. 9,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Shaft No. 10,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Shaft No. 10, Jr.,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Shaft No. 1,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Shaft No. 8,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Shaft No. 4,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Shaft No. 7,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Hoyte shaft,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Shaft No. 5,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Shaft No. 6,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Shaft No. 11,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Shaft No. 14,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Tunnel No. 14,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
No. 6 washery,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
No. 8 washery,	Luzerne,	Wm. A. May,	Scranton,	Sidney Williams,	Dunmore,	Erie and Wyoming.
Lehigh Valley Coal Co.						
Prospect shaft,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Oakwood shaft,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Midvale slope,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Hillman slope,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Wyoming shaft,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Henry shaft,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Exeter No. 1 shaft,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Exeter No. 2 shaft,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Heidelberg shaft,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Heidelberg slope,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Maltby shaft,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Maltby slope,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Mineral Spring slope,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Coal Brook slope,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Hillside Coal and Iron Co.						
Consolidated slope,	Luzerne,	W. A. May,	Scranton,	Wm. W. Inglis,	Scranton,	Erie and Wyoming.
Consolidated shaft,	Luzerne,	W. A. May,	Scranton,	Wm. W. Inglis,	Scranton,	Erie and Wyoming.
Butler shaft,	Luzerne,	W. A. May,	Scranton,	Wm. W. Inglis,	Scranton,	Erie and Wyoming.
Butler tunnel,	Luzerne,	W. A. May,	Scranton,	Wm. W. Inglis,	Scranton,	Erie and Wyoming.
Chapman shaft,	Luzerne,	W. A. May,	Scranton,	Wm. W. Inglis,	Scranton,	Erie and Wyoming.

Fernwood shaft,	Luzerne,	W. A. May,	Scranton,	Wm. W. Inglis,	Scranton,	Erie and Wyoming.
Fernwood tunnel,	Luzerne,	W. A. May,	Scranton,	Wm. W. Inglis,	Scranton,	Erie and Wyoming.
Temple Iron Co.						
Mount Lookout shaft,	Luzerne,	S. B. Thorne,	Scranton,	George Steele,	Wyoming,	Lehigh Valley.
Harry E. shaft,	Luzerne,	S. B. Thorne,	Scranton,	George Steele,	Wyoming,	Lehigh Valley.
Forty Fort shaft,	Luzerne,	S. B. Thorne,	Scranton,	George Steele,	Wyoming,	Lehigh Valley.
Babylon shaft,	Luzerne,	S. B. Thorne,	Scranton,	George Steele,	Wyoming,	Lehigh Valley.
Babylon slope,	Luzerne,	S. B. Thorne,	Scranton,	George Steele,	Wyoming,	Lehigh Valley.
Delaware and Hudson Co.						
Delaware shaft,	Luzerne,	C. C. Rose,	Scranton,	E. R. Pettebone,	Scranton,	Delaware and Hudson.
Langcliffe shaft,	Luzerne,	C. C. Rose,	Scranton,	E. R. Pettebone,	Scranton,	Delaware and Hudson.
Langcliffe tunnel,	Luzerne,	C. C. Rose,	Scranton,	E. R. Pettebone,	Scranton,	Delaware and Hudson.
Laflin shaft,	Luzerne,	C. C. Rose,	Scranton,	E. R. Pettebone,	Scranton,	Delaware and Hudson.
Del., Lack. and West. R. R. Co.						
Hallstead shaft,	Luzerne,	E. E. Loomis,	Scranton,	E. J. Evans,	Scranton,	Del., Lack. and Western.
Pettebone shaft,	Luzerne,	E. E. Loomis,	Scranton,	Montrose Barnard,	Kingston,	Del., Lack. and Western.
Seneca Coal Co.						
Twin No. 1 shaft,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Twin No. 2 shaft,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Phoenix shaft,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Columbia shaft,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley.
Raub Coal Co.						
Louise slope,	Luzerne,	S. J. Tonkins,	Luzerne,			Lehigh Valley.
Louise tunnel,	Luzerne,	S. J. Tonkins,	Luzerne,			Lehigh Valley.
Laurel Run Coal Co.						
Laurel Run slope,	Luzerne,	Geo. T. Neally,	Wilkes-Barre,			Erie.
State Line & Sullivan R. R. Co.						
Bernice drift,	Sullivan,	O. A. Baldwin,	Towanda,	R. E. Dunstan,	Towanda,	Lehigh Valley.
W. B. Gunton.						
Lykens drift,	Sullivan,	W. B. Gunton,	Bernice,			Lehigh Valley.
Stevens Coal Co.						
Stevens shaft,	Luzerne,	H. W. Kingsbury,	Scranton,	David W. Evans,	Pittston,	Lehigh Valley.
Stevens slope,	Luzerne,	H. W. Kingsbury,	Scranton,	David W. Evans,	Pittston,	Lehigh Valley.
Wyoming Coal and Land Co.						
Griffith tunnel,	Luzerne,	F. H. Clemons,	Scranton,	S. B. Williams,	Wyoming,	Lehigh Valley.
Gardner Creek Coal Co.						
Gardner Creek tunnel,	Luzerne,	Clarence B. Sturges	Scranton,			New York and Erie.
Crescent Coal Co.						
Crescent tunnel,	Luzerne,	Mathew Hart,	Laflin,			Lehigh Valley.
Hicks River Coal Co.						
Morning Star tunnel,	Luzerne,	G. H. Tench,	Pittston,			Lehigh Valley.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
John C. Haddock.						
Black Diamond shaft,	Luzerne,	James B. Davies,	Plymouth,			Del., Lack. and Western.
Clear Spring Coal Co.						
Clear Spring shaft,	Luzerne,	J. L. Cake,	Pittston,			Del., Lack. and Western.
Florence Coal Co., Limited.						
Elmwood No. 1 shaft,	Luzerne,	Chas. P. Ford,	Scranton,			Lehigh Valley and Erie.
Elmwood No. 2 shaft,	Luzerne,	Chas. P. Ford,	Scranton,			Lehigh Valley and Erie.
W. G. Payne & Co.						
East Boston shaft,	Luzerne,	W. E. Payne,	Kingston,	Wm. O. Williams.	Kingston,	Del., Lack. and Western.
Traders' Coal Co.						
Ridgewood slope,	Luzerne,	Soloman Deeble,	Avoca,			N. Y. & W., and C. R. R. of N. J.
Avoca Coal Co.						
Avoca shaft,	Luzerne,	W. H. Hollister,	Avoca,			L. V., E. & W. V.
Robertson & Law.						
Katy Did slope,	Luzerne,	John M. Robertson,	Moosic,			Erie & Wyoming Valley.
Katy Did tunnel,	Luzerne,	John M. Robertson,	Moosic,			Erie & Wyoming Valley.
Algonquin Coal Co.						
Pine Ridge shaft,	Luzerne,	Geo. T. Neally,	Wilkes-Barre,			Erie.
Wm. Richmond.						
Yatesville tunnel,	Luzerne,	Wm. Richmond,	Yatesville,			New York and Erie.
North American Coal Co.						
Luzerne washery,	Luzerne,	James T. Sharkey,	Pittston,			Lehigh Valley.
Warnke Coal Co.						
Warnke washery,	Luzerne,	Fred. Warnke,	Scranton,			Del., Lack. and Western.

TABLE II—Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Third Anthracite District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Pennsylvania Coal Co.												
Barnum Nos. 1, 2 and 3 shafts, ...	Luzerne,.......	280,162.08	7,782	....	287,944.08	169	745	1	7	11,011	284	65
Laws and No. 13 shafts, ...	Luzerne,.......	204,481.04	6,745	....	211,226.04	165.7	550	3	1	5,241	1,343	52
Shafts Nos. 9, 10 and 10 Jr., ...	Luzerne,.......	221,530.01	14,119	....	235,649.01	166.8	643	2	5	7,375	568	69
Shafts Nos. 1 and 8, ...	Luzerne,.......	158,584.06	3,585	....	162,169.06	165.1	431	1	1	4,496	2,979	49
Hoyte and Nos. 4 and 7 shafts, ...	Luzerne,.......	258,292.09	16,963	....	275,255.09	159.8	852	2	5	10,102	1,452	76
Shafts Nos. 5, 6 and 11, ...	Luzerne,.......	290,902.18	10,817	....	301,719.18	158	884	5	12	12,371	7,566	82
Nos. 14 shaft and tunnels, ...	Luzerne,.......	34,234.13	2,319	....	36,553.13	25.2	66	1	2	1,270	932	62
No. 6 washery, ...	Luzerne,.......	89,579.08	781	....	90,360.08	113.7	49	......	......	....	....	1
No. 8 washery, ...	Luzerne,.......	72,123.18	1,488	....	73,611.18	177.6	47	1	......	....	....	1
Total, ...	....	1,609,891.05	64,599	....	1,674,490.05	162.6	4,276	16	33	51,866	15,124	457
Lehigh Valley Coal Co.												
Prospect shaft, ...	Luzrene,.......	355,660.15	26,510	1,569.02	383,739 17	209.85	907	7	12	9,272	41,605	105
Oakwood shaft, ...												
Wyoming shaft, ...												
Hillman slope, ...												
Midvale slope, ...												
Henry shaft, ...	Luzerne,.......	226,780.00	2,680	3,092.00	232,552.00	....	548	......	6	6,705	30,776	77
Exeter Nos. 1 and 2 shaft, ...	Luzerne,.......	360,045.04	18,019	6,864.10	384,928.14	227.80	694	5	14	7,569	124,821	86
Heidelberg shaft, ...	Luzerne,.......	111,206.10	11,985	2,432.00	125,623.10	161	295	1	......	4,168	3,666	40
Heidelberg slope, ...	Luzerne,.......	137,600.03	4,050	85.00	141,735.03	178.35	312	2	......	4,074	3,739	53
Maltby shaft, slope and tunnel,.......	Luzerne,.......	135,017.05	15,131	1,750.10	151,898.15	107.75	Idle.	3	4	4,445	20,774	84
Total, ...	....	1,326,309.17	78,375	15,793.02	1,420,477.19	176.95	2,756	18	36	36,233	225,381	445

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Hillside Coal and Iron Co.												
Consolidated slope, ... Consolidated shaft, ...	Luzerne,.......	155,736.04	5,009	807.00	161,552.04	179.45	537	1	6	5,535	622	55
Butler shaft and tunnel, ...	Luzerne,.......	165,307.04	10,557	842.10	176,706.14	188.90	539	1	1	7,443	3,103	56
Fernwood shaft and tunnel, ...	Luzerne,.......	91,352.03	13,687	641.10	105,680.13	158.60	423	3	3	4,934	7,911	57
Total, ...	....	412,395.11	29,253	2,291.00	443,939.11	175.65	1,499	5	10	17,912	11,636	168
Temple Iron Co.												
Mt. Lookout shaft, ...	Luzerne,.......	181,649.02	44,084	6,717.12	232,450.14	190.2	563	7	10	9,246	16,500	70
Harry E shaft, ...	Luzerne,.......	246,514.16	23,062	2,936.07	272,513.03	241.8	573	1	6	8,600	4,875	81
Forty Fort shaft, ...	Luzerne,.......	91,284.00	9,441	....	100,725.00	241.8	220	1	3	3,950	1,500	38
Babylon shaft and slope, ...	Luzerne,.......	7,769.13	9,000	103.00	16,872.13	8	10	......	......	357	400	57
Total, ...	....	527,217.11	85,587	9,756.19	622,561.10	226.6	1,366	9	19	22,153	23,275	246
Delaware and Hudson Co.												
Delaware shaft, ...	Luzerne,.......	57,792.04	9,520	770.10	68,082.14	76.25	388	1	1	2,666	2,255	37
Langcliffe shaft and tunnel, ...	Luzerne,.......	119,389.19	5,125	689.16	125,204.15	153.25	385	2	11	4,561	1,702	63
Laflin shaft, ...	Luzerne,.......	83,713.04	6,286	1,865.02	91,864.06	125	265	2	......	2,639	11,662	35
Total, ...	....	260,895.07	20,931	3,325.08	285,151.15	118.17	1,038	5	12	9,866	15,619	135
Del., Lack'a and Western R. R. Co.												
Hallstead shaft, ...	Luzerne,.......	61,918.10	8,349	2,057.10	72,325.00	144.90	265	2	2	3,521	765	37
Pettebone shaft, ...	Luzerne,.......	310,141.17	16,000	9,623.05	335,765.02	200.60	741	......	12	8,700	5,400	75
Total, ...	....	372,060.07	24,349	11,680.15	408,090.02	172.75	1,006	2	14	12,221	6,165	112

Seneca Coal Co. Twin Nos. 1 and 2 shafts, ... Phonex and Columbia shafts, ...	Luzerne,.......	273,159.06	20,000	14,416.00	307,575.06	235.70	767	4	......	14,925	9,000	103
Raub Coal Co. Louise slope and tunnel, ...	Luzerne,.......	92,074.04	9,850	6,503.10	108,427.14	138	360	1	4	3,175	8,900	40
John C. Haddock. Black Diamond shaft, ...	Luzerne,......	82,232.17	26,000	4,165.06	112,398.02	173.70	301	1	4	2,100	11,500	30
Clear Spring Coal Co. Clear Spring shaft, ...	Luzerne,.......	230,874.16	15,000	16,022.05	261,897.01	251.95	658	3	1	9,170	7,950	75
Florence Coal Co., Limited. Elmwood Nos. 1 and 2 shafts,..........	Luzerne,.......	10,437.11	....	995.17	11,433.08	30.40	....	......	1	322	75	....
W. G. Payne & Co. East Boston shaft, ...	Luzerne,.......	141,847.17	14,185	6,755.05	162,788.02	157	481	1	8	5,040	1,350	47
Traders' Coal Co. Ridgewood slope, ...	Luzerne,.......	84,073.03	5,316	1,819.03	91,208.06	185.85	330	5	3	5,300	1,500	37
Avoca Coal Co. Avoca shaft, ...	Luzerne,.......	71,001.03	9,636	6,335.11	86,972.14	231	367	1	2	3,541	5,000	47
Robertson & Law. Katy Did tunnel and slope, ...	Luzerne,.......	74,605.00	3,000	1,017.00	78,712.00	197.25	194	......	1	2,906	4,728	24
Algonquin Coal Co. Pine Ridge shaft, ...	Luzerne,.......	242,803.19	14,528	18,258.03	275,590.02	246.80	674	3	5	10,571	6,450	72
Laurel Run Coal Co. Laurel Run slope, ...	Luzerne,.......	62,199.13	8,760	6,933.10	77,893.03	97	354	5	3	3,204	3,050	60
State Line & Sullivan Railroad Co. Bernice drift, ...	Sullivan,......	59,242.00	4,851	1,260.15	65,353.15	96.25	233	......	1	1,363	500	46
W. B. Gunton. Lykens drift, ...	Sullivan,.......	67,129.00	550	3,133.10	70,812.10	149.70	201	......	......	1,200	....	22
Stevens Coal Co. Stevens shaft and slope, ...	Luzerne.......	145,393.03	20,404	4,022.03	169,819.06	177.55	393	2	14	7,298	18,500	51
Wyoming Coal and Land Co. Griffith tunnel, ...	Luzerne,.......	96,191.12	10,450	1,979.11	108,621 03	192.50	212	3	1	4,975	16,400	28
Gardner Creek Coal Co. Gardner Creek tunnel, ...	Luzerne,.......	15,580.11	2,430	120.00	18,130.11	133.50	....	......	......	700	250	....
Crescent Coal Co. Crescent tunnel, ...	Luzerne,.......	8,445.12	1,500	10.00	9,955.12	115	22	......	......	510	30	6

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Hicks River Coal Co. Morning Star tunnel,	Luzerne,	3,898.00	400	850.00	5,148.00	91	37	......	1	339	3	6
Wm. Richmond. Yatesville tunnel,	Luzerne,	15,180.06	1,410	16.00	16,636.06	126	....	......	......	1,470	650	14
North American Coal Co. Luzerne washery,	Luzerne,	4,422.00	128	415.00	4,965.00	16	*	......	......	....	....	....
Warnke Coal Co. Warnke washery,	Luzerne,	25,859.04	690	....	26,549.04	115	25	......	......	....	....	1
Total,	....	1,806,650.17	169,118	95,118.09	2,070,887.06	162.5	5,713	29	49	78,109	95,836	769

*Abandoned January, 1901.

Recapitulation.

Pennsylvania Coal Co.,	....	1,609,891.05	64,599	....	1,674,490.05	162.6	4,276	16	33	51,866	15,124	457
Lehigh Valley Coal Co.,	....	1,326,309.17	78,375	15,793.02	1,420,477.19	176.95	2,756	18	36	36,233	225,381	445
Hillside Coal and Iron Co.,	....	412,395.11	29,253	2,291.00	443,939.11	226.60	1,366	9	19	22,153	23,275	246
Temple Iron Co.,	....	527,217.11	85,587	9,756.19	622,561.10	226.60	1,366	9	19	22,153	23,275	246
Delaware and Hudson Co.,	....	260,895.07	20,931	3,325.08	285,151.15	118.17	1,038	5	12	9,866	15,619	135
Del., Lack'a & West. R. R. Co.,	....	372,060.07	24,349	11,680.15	408,090.02	172.75	1,006	2	14	12,221	6,165	112
Miscellaneous Coal Co's,	....	1,806,650.17	169,118	95,118.09	2,070,887.06	162.5	5,713	29	49	78,109	95 836	769
Total,	....	6,315,421	472,212	137,965	6,925,598	173.25	17,654	84	173	228,360	393,036	2,272

TABLE II—Continued.

Names of Operators and Collieries.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Pennsylvania Coal Co.,	Luzerne,	35	1,400	51	7,605	9,005	10	5	......	133	15,041	30	23,792	11,530	......	6
Lehigh Valley Coal Co.,	Luzerne,	27	1,917	34	6,700	8,617	9	......	1	95	14,337	20	13,841	11,733	3	4
Hillside Coal and Iron Co.,	Luzerne,	24	720	23	2,085	2,805	5	......	......	31	1,050	6	2,410	2,310	......	......
Temple Iron Co.,	Luzerne,	24	576	17	4,575	5,151	4	......	3	84	4,480	14	11,484	5,014	3	6
Delaware and Hudson Co.,	Luzerne,	24	720	11	1.350	2,070	2	......	......	37	1,810	5	4,950	3,085	......	2
Del., Lackawanna and Western R. R. Co.,	Luzerne,	41	1,060	8	1,040	2,040	......	......	......	29	2,374	8	7,000	4,700	2	......
Miscellaneous coal companies,	Luz. & Sul.,	109	3,087	87	10,758	13,845	11	......	2	178	12,234	34	23,030	13,090	3	8
Total,	....	284	9,420	231	34,113	43,533	41	5	6	587	51,326	117	86,507	51,462	11	26

TABLE III—Showing the number of each class of employes at each colliery in the Third Anthracite District, during the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							
		Inside foremen and mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	Grand total, inside and outside.
Pennsylvania Coal Co.																	
Barnum Nos. 1, 2 and 3 shafts,	Luzerne,	3	3	209	209	100	20	46	590	1	5	16	60	1	72	155	745
Laws and No. 13 shafts,	Luzerne,	2	2	166	145	59	8	35	417	1	4	15	70	1	51	142	559
Shafts No. 9, 10 and 10 Jr.,	Luzerne,	3	4	162	148	89	17	43	466	1	8	24	81	1	62	177	643
Shafts Nos. 1 and 8,	Luzerne,	2	2	118	114	48	3	24	311	1	3	11	54	1	50	120	431
Hoyte and Nos. 4 and 7 shafts,	Luzerne,	3	8	263	198	89	42	40	643	1	8	24	96	1	79	209	852
Shafts Nos. 5, 6 and 11,	Luzerne,	3	3	257	208	133	18	67	689	1	5	29	72	1	87	195	884
No. 14 shaft and tunnels,	Luzerne,	2	4	14	10	4	1	3	38	1	3	12	6	1	5	28	66
No. 6 washery,	Luzerne,	......	......	......	......	......	......	......	......	1	......	5	......	......	43	49	49
No. 8 washery,	Luzerne,	......	......	......	......	......	......	......	......	1	......	1	......	......	45	47	47
Total,		18	26	1,189	1,032	522	109	258	3,154	9	36	137	429	7	494	1,122	4,276
Lehigh Valley Coal Co.																	
Prospect shaft, Oakwood shaft, Wyoming shaft, Hillman slope, Midvale slope,	Luzerne,	4	7	179	160	90	37	163	640	1	17	18	22	5	204	267	907
Henry shaft,	Luzerne,	3	3	112	117	62	16	71	384	1	16	16	5	2	124	164	548
Exeter No. 1 and 2 shaft,	Luzerne,	2	4	179	184	69	5	77	520	1	16	20	27	5	105	174	694

Heidelberg shaft,	Luzerne,	1	1	60	58	24	1	20	165	1	6	7	65	4	47	130	295
Heidelberg slope,	Luzerne,	1	1	67	58	28	......	21	176	1	5	6	66	4	54	136	312
Maltby shaft, slope and tunnel,	Luzerne,	*	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Total,	......	11	16	597	577	273	59	352	1,885	5	60	67	185	20	534	871	2,756
Hillside Coal and Iron Co.																	
Consolidated slope, } Consolidated shaft,	Luzerne,	2	......	178	167	47	4	21	419	1	5	5	46	1	60	118	537
Butler shaft and tunnel, } Chapman shaft,	Luzerne,	2	2	132	87	57	2	54	336	1	9	16	87	3	87	203	539
Fernwood shaft and tunnel,	Luzerne,	1	......	120	64	49	9	48	291	1	11	9	58	3	50	132	423
Total,	......	5	2	430	318	153	15	123	1,046	3	25	30	191	7	197	453	1,499
Temple Iron Co.																	
Mt. Lookout shaft,	Luzerne,	2	3	173	91	53	11	56	389	1	11	24	63	4	71	174	563
Harry E shaft,	Luzerne,	1	5	144	110	58	19	38	375	1	10	11	101	2	73	198	573
Forty Fort shaft,	Luzerne,	1	1	73	60	21	10	32	198	1	5	9	......	1	6	22	220
Babylon shaft and slope,	Luzerne,	1	2	......	......	......	......	......	3	1	1	5	......	......	......	7	10
Total,	......	5	11	390	261	132	40	126	965	4	27	49	164	7	150	401	1,366
Delaware and Hudson Co.																	
Delaware shaft,	Luzerne,	2	......	68	80	34	11	46	241	1	6	14	85	1	40	147	388
Langcliffe shaft and tunnel,	Luzerne,	2	......	112	73	46	4	27	264	1	7	7	57	2	47	121	385
Laflin shaft,	Luzerne,	1	......	62	39	16	4	15	137	1	7	6	56	1	57	128	265
Total,	......	5	......	242	192	96	19	88	642	3	20	27	198	4	144	396	1,038
Del. Lack. & West. R. R. Co.																	
Hallstead shaft,	Luzerne,	1	2	42	44	22	4	29	144	1	3	12	55	1	49	121	265
Pettebone shaft,	Luzerne,	2	3	174	160	78	25	104	546	1	9	14	105	2	64	195	741
Total	......	3	5	216	204	100	29	133	690	2	12	26	160	3	113	316	1,006
Seneca Coal Co.																	
Twin Nos. 1 and 2 shafts, } Phoenix and Columbia shafts,	Luzerne,	4	5	208	164	81	18	62	542	1	10	22	69	6	117	225	767
Rauh Coal Company.																	
Louise slope and tunnel,	Luzerne,	3	1	105	40	40	3	30	222	1	6	17	60	3	51	138	360
John C. Haddock.																	
Black Diamond shaft,	Luzerne,	1	3	50	41	41	9	25	170	1	6	17	71	3	33	131	301
Clear Spring Coal Co.																	
Clear Spring shaft,	Luzerne,	2	4	176	136	74	49	83	524	1	8	11	78	4	32	134	658
Florence Coal Co., Limited.																	
Elmwood Nos. 1 and 2 shafts,†	Luzerne,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total, inside and outside.
		Inside foreman or mine boss.	Fire bossses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
W. G. Payne & Co. East Boston shaft,	Luzerne,	4	3	102	80	69	15	38	311	1	4	16	85	5	59	170	481
Traders' Coal Co. Ridgewood slope,	Luzerne,	2	1	102	50	45	10	26	236	1	6	7	42	4	34	94	330
Avoca Coal Co. Avoca shaft,	Luzerne,	3	1	112	79	35	8	21	259	1	3	3	52	3	46	108	367
Robertson and Law. Katy Did slope and tunnel,	Luzerne,	1	......	50	50	18	4	15	138	1	3	8	24	3	17	56	194
Algonquin Coal Co. Pine Ridge shaft,	Luzerne,	2	4	161	155	81	9	50	462	1	8	11	130	3	59	212	674
Laurel Run Coal Co. Laurel Run slope,	Luzerne,	1	3	65	60	47	13	52	241	1	5	5	60	3	39	113	354
State Line and Sullivan R. R. Co. Bernice drift,	Sullivan,	1	......	97	8	10	6	15	137	1	6	8	14	4	63	96	233
W. B. Gunton. Lykens drift,	Sullivan,	1	......	60	60	10	1	12	144	......	2	2	30	2	21	57	201

Stevens Coal Co. Stevens shaft and slope, ...	Luzerne,.......	2	4	109	91	38	6	37	287	1	6	15	30	4	50	106	393
Wyoming Coal and Land Co. Griffith tunnel, ...	Luzerne,.......	1	1	67	24	26	5	17	141	1	6	7	23	3	31	71	212
Gardner Creek Coal Co. Gardner Creek tunnel, ...	Luzerne,.......	......	......	....	....	....	....	....	....	......	......	......	....	....	....	....	....
Crescent Coal Co. Crescent tunnel,, ...	Luzerne,.......	1	......	4	4	2	....	....	11	1	1	3	4	2	....	11	22
Hicks River Coal Co. Morning Star tunnel, ...	Luzerne,.......	1	......	10	8	4	....	1	24	1	1	2	4	1	4	13	37
Wm. Richmond, Yatesville tunnel, ...	Luzerne,.......	1	......	30	28	9	1	3	72	1	2	2	25	2	....	32	104
North American Coal Co. Luzerne washery, ...	Luzerne,.......	......	......	....	....	....	....	....	....	......	......	......	....	....	....	....	....
Warnke Coal Co. Warnke washery, ...	Luzerne,.......	......	......	....	....	....	....	....	....	1	......	3	4	2	15	25	25
Total, ...	....	31	30	1,508	1,078	630	157	487	3,921	17	83	159	805	57	671	1,792	5,713

*Men on strike since August.

†This company ceased operations on August 17, 1901.

Recapitulation.

Pennsylvania Coal Co., ...	....	18	26	1,189	1,032	522	109	258	3,154	9	36	137	429	7	494	1,122	4,276
Lehigh Valley Coal Co., ...	....	11	16	597	577	273	59	352	1,885	5	60	67	185	20	534	871	2,756
Hillside Coal and Iron Co., ...	....	5	2	430	318	153	15	123	1,046	3	25	30	191	7	197	453	1,499
Temple Iron Co., ...	....	5	11	390	261	132	40	126	965	4	27	49	164	7	150	401	1,366
Delaware and Hudson Co., ...	....	5	......	242	192	96	19	88	642	3	20	27	198	4	144	396	1,038
Del., Lack'a and West. R. R. Co.,.	....	3	5	216	204	100	29	133	690	2	12	26	160	3	113	316	1,006
Miscellaneous coal companies, ...	....	31	30	1,508	1,078	630	157	487	3,921	17	83	159	805	57	671	1,792	5,713
Total, ...	....	78	90	4,572	3,662	1,906	428	1,567	12,303	43	263	495	2,142	105	2,303	5,351	17,654

TABLE III—Continued.

Names of Operators and Collieries.	County.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Pennsylvania Coal Co.	Luzerne,	17.3	12.4	16.5	13.6	13.7	14.8	11.4	14.7	11.5	11.5	12.5	14.6	162.6
Lehigh Valley Coal Co.,	Luzerne,	19.2	16.9	18.1	11.3	17.8	18.6	9.8	15.3	16.5	17.7	17.6	14	176.9
Hillside Coal and Iron Co.,	Luzerne,	18.2	13.6	16.2	14	12.8	15.8	14.2	16.2	13.3	11.3	15.1	13.5	175.6
Temple Iron Co.,	Luzerne,	22.8	19.1	22.2	14	22.6	12.8	13	20.5	20.3	22	16.8	18.3	226.6
Delaware and Hudson Co.,	Luzerne,	....	....	12.5	13	12.3	8.8	10.6	16.8	15.4	15.5	14.5	10.7	118.2
Delaware, Lackawanna and Western R. R. Co.,	Luzerne,	17	14.3	16.1	13.6	13.5	14.3	16.5	17.2	15.5	16.4	17.6	15.8	172.7
Miscellaneous coal companies,	Luz. & Sul.,	18.3	13.8	14.4	13.6	14.8	13.8	14.1	15.8	15.7	15.4	15.4	15	180.1
Total,	....	18.8	15	16.6	13.3	15.4	14.1	12.8	16.6	15.4	17.7	15.6	14.8	*173.25

*Average time.

TABLE IV—List of fatal accidents that occurred in and about the mines of the Third Anthracite District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	3	David J. Williams,	Welsh,	Mine boss,	36	M.	1	2	Laurel Run slope,	Luzerne,	These men entered Laurel Run slope working and were suffocated by damp from a fire in workings of the Delaware shaft.
	3	Wm. Morgan,	Welsh,	Asst. boss,	60	M.	1	....	Laurel Run slope,	Luzerne,	
	3	Martin Fortune,	Irish,	Fire boss,	50	M.	1	2	Laurel Run slope,	Luzerne,	
	11	Antidan Orieni,	Italian,	Miner,	29	S.	....	....	Ridgewood slope,	Luzerne,	Instantly killed by fall of top coal. After firing a blast, he went under it to work out loose coal, when the top coal fell on him.
	15	Alex. Chester,	American,	Driver,	15	S.	....	....	No. 13 shaft,	Lackawann	Killed while riding between loaded car coming out gangway road by falling between them.
	21	Morris Monahan,	Irish,	Door boy,	16	S.	....	....	Hillman slope,	Luzerne,	Killed while sitting on bumper of loaded car at foot of inside slope by an empty car coming down slope.
	23	Signo Putinets,	Italian,	Miner,	26	S.	....	....	Ridgewood slope,	Luzerne,	Killed in a breast adoining his own by a fall of rock; after firing a blast for the other miner. He returned to face to see the effects and the rock fell on him.
	24	John J. O. Malley,	Irish,	Miner,	38	M.	1	1	Black Diamond shaft	Luzerne,	Killed while working at face of his breast by fall of rock; the roof was well propped but it was bod.
	30	Joseph Sandy,	Italian,	Miner,	47	M.	1	1	Fernwood shaft,	Luzerne,	Fatally injured while thawing out a stick of dynamite by the blaze of his lamp, and died next day; his laborer was slightly injured at the same time.
	31	Patrick Brennan,	American,	Laborer,	27	S.	....	....	No. 14 shaft,	Luzerne,	Fatally injured and died next day by a fall of rock while working at face of breast in Checker vein.
	31	Daniel Mulhern,	American,	Laborer,	25	S.	....	....	No. 4 shaft,	Luzerne,	Fatally injured by fall of rock while loading a car at face of breast in Checker vein.
Feb.	9	Michael Bly,	Irish,	Miner,	45	M.	1	6	Clear Spring shaft,	Luzerne,	Fatally injured; having been struck by a prop which was knocked out by a fall of coal; died next day.

TABLE IV—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
16	Anthony Devers,	Irish,	Miner,	42	S.	....	....	No. 1 shaft,	Luzerne,	Instantly killed by a fall of rock at face of breast; was told by his fellow miner to be careful or it would fall on him.
16	Michael Powval,	Slav,	Laborer,	31	M.	1	2	Maltby breaker,	Luzerne,	Killed by a runaway car on breaker plane.
25	John Stretonsky,	Slav,	Laborer,	40	M.	1	3	Prospect shaft,	Luzerne,	Killed by a fall of rider coal. Was barring it down at the time.
26	Alfred Vanderhoof,	American,	Laborer,	22	S.	....	....	Maltby slope,	Luzerne,	Instantly killed by fall of coal while helping his miner to drill a hole.
March 12	Wm. Marsonis,	Pole,	Laborer,	23	S.	....	....	Clear Spring shaft,	Luzerne,	Killed by a fall of rock at the face of breast. The miner had fired a blast which dislodged two props, allowing a piece of rock to fall.
15	Nicholas Lungavlus,	Pole,	Miner,	42	W.	....	1	Laflin shaft,	Luzerne,	Fatally burned and bruised by a premature blast while forcing a cartridge into a hole; died April 7.
20	Lewis Kuculas,	Pole,	Miner,	37	M.	1	....	Twin No. 2 shaft,	Luzerne,	Killed by a fall of rock in the shape of a bell at face of breast.
21	Patrick McClain,	American,	Miner,	44	M.	1	6	No. 5 shaft,	Luzerne,	Killed by fall of rock. His attention was called to the danger by his laborer, but he said it was all right.
28	George Shedlock,	Slav,	Miner,	39	M.	1	5	Prospect shaft,	Luzerne,	Killed while riding up the inside slope. He was ordered off by the footman, but refused to get off, and was caught by a low roof and dragged over top of cars.
29	Morgan Davies,	Welsh,	Miner,	55	M.	1	....	Ridgewood slope,	Luzerne,	These two men were killed by a fall of bony coal and rock while taking out the pillars on the gangway road. They went into an old breast and fired a blast when the fall took place.
29	Angelo Scotch,	Italian,	Laborer,	40	M.	1	....	Ridgewood slope,	Luzerne,	
30	Frank Handless,	German,	Laborer,	35	S	....	....	Barnum No. 3 shaft,	Luzerne,	Fatally injured; his miner was taking the pillars out when Handless thought he heard the roof crack; he jumped toward the road and struck his head against a loaded car with such force as to fracture his skull; died the same day.

	30	Stanley Merleski, ...	Pole, ...	Laborer, ...	45	M.	1	3	Louise slope, ...	Luzerne,...	Killed by fall of coal and rock while mining out loose coal.
April	3	John Mersheski, ...	Pole, ...	Laborer, ...	35	M.	1	....	Heidelberg No. 2, ...	Luzerne,...	Fatally injured by a premature blast; he drilled a hole and lighted the match, but before he got to a place of safety the shot exploded, the flying coal struck him on the head; he died April 7.
	23	Con. McHugh, ...	American, .	Co. miner, ...	55	M.	1	1	Laurel Run slope, ..	Luzerne,...	Fatally injured while bailing water in Rees vein by a fall of rock; died June 9.
	23	Michael Stanock, ...	Pole, ...	Miner, ...	44	M.	1	2	Griffith tunnel, ...	Luzerne,...	Instantly killed by a fall of rock in the Cross entrance; the roof was bad, but the miner failed to secure it.
	23	Joe Jozock, ...	Pole, ...	Laborer, ...	44	M.	1	4	Griffith tunnel, ...	Luzerne,...	
	24	George Teets, ...	American, ..	Driver, ...	17	S.	....	....	Heidelberg No. 1, ...	Luzerne,...	Fatally injured; it was supposed that he was kicked by the mule he was driving. He was found on the side of gangway road. He could not speak and died before he was taken outside. There were no marks on his body.
	25	John Wyto, ...	Pole, ...	Miner, ...	28	S.	....	....	Mt. Lookout shaft, ..	Luzerne,...	Fatally burned by gas; he fired a blast which cut a gas feeder and in going back to examine what the blast had done, he ignited the gas.
	29	Alex. Lesnick, ...	Pole, ...	Miner, ...	30	M.	1	....	No. 11 shaft, ...	Luzerne,...	Instantly killed by falling down the shaft from the Pittston to Red Ash vein. A cage full of men was being hoisted and the footman had rung the bell to engineer to hoist, when Lesmick came out, and just as the cage started he tried to get on. The men on cage told him to keep off as bell was rung, but he tried to get on and fell into the shaft.
May	3	Joseph Richcar, ...	Slav, ...	Miner, ...	32	M.	1	2	Pine Ridge shaft, ...	Luzerne,...	Fatally injured by a fall of rock in Hillman vein. Died same day.
	6	Joseph Gibbs, ...	Lithuanian,	Laborer, ...	32	S.	....	....	Exeter No. 2 shaft, .	Luzerne,...	Fatally injured in Red Ash vein by fall of top coal while loading a car; died the same day.
	7	James Young, ...	American, .	Driver, ...	15	S.	....	....	No. 13 shaft, ...	Lack'a,....	Killed while drawing a trip of two loaded cars out the gangway road, by falling under the cars.
	9	Daniel Calvery, ...	Irish, ...	Runner, ...	19	S.	....	....	Consolidated slope, ..	Luzerne,...	Fatally injured by a fall of top coal.
	13	Michael Flannery, ..	American, .	Laborer, ...	40	M.	1	....	Heidelberg No. 1, ..	Luzerne,...	Fatally injured on culm bank; while unhitching his mule from culm car he slipped and fell in front of car, which ran on him; he died May 20.
	15	Thomas Brown, ...	Irish, ...	Culm driver,....	19	S.	....	....	Langcliffe shaft, ...	Luzerne,...	Fatally injured; his leg was crushed between empty cars. Died the next day.
	21	John Taylor, ...	Welsh, ...	Shaft footman,.	47	S.	....	....	Hallstead shaft, ...	Luzerne,...	Fatally injured by fall of rock. Was told by the miner not to get under this rock, but he answered that he knew as much about the roof as the miner did, as he was a miner himself. He died next day.

TABLE IV—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
22	Nicholas Lanzees, ..	Italian, ...	Car loader, ...	20	S.	...	....	No. 10 breaker, ...	Luzerne,...	Instantly killed while running a railroad car from one schute to another under the breaker. He failed to get the brake to work and jumped off the car in front, fell across the rail and the car wheel passed over his body.
23	Anthony Pennone, ..	Italian, ...	Miner, ...	25	S.	...	....	Fernwood shaft, ...	Luzerne,...	Killed by a fall of rock at face of breast. Had fired a blast in the coal and returned to examine the result.
28	John Jozenskie, ...	Pole, ...	Laborer, ...	25	S.	...	....	Pine Ridge shaft, ..	Luzerne,...	Killed by a fall of rider coal and slate while loading a car at face of breast.
June 3	Joseph Hope, ...	Scotch, ...	Miner, ...	29	M.	1	2	Pine Ridge shaft, ...	Luzerne,...	Killed by a blast he was firing; the match had burned over half, but he ignited it again, and failed to get to a place of safety before the shot exploded.
24	Charles Butkavage,	Pole, ...	Laborer, ...	24	S.	...	....	Mt. Lookout shaft, ..	Luzerne,...	Fatally burned by gas. He went into an abandoned breast and ignited gas at the face; died June 28.
July 12	Paul Sherval, ...	Slav, ...	Miner, ...	32	S.	...	....	Maltby shaft, ...	Luzerne,...	Fatally injured by a premature blast he was firing;died July 15.
30	Enoch Miller, ...	Pole, ...	Miner, ...	35	S.	...	....	Forty Fort shaft, ..	Luzerne,...	Killed by a blast in Cross cut he was driving to the adjoining breast, which was almost through, and the miner fired a blast from the opposite side, and he warned Miller to get away, but he failed to heed the warning.
Aug. 1	Anthony Runta, ...	Lithuanian,	Laborer, ...	40	M.	1	5	East Boston shaft, ..	Luzerne,...	Killed by a runaway car on inside slope.
3	Turk Tulay, ...	Pole, ...	Laborer, ...	32	M.	1	1	Laflin, outside, ...	Luzerne,...	Killed while unloading railroad car into schute; a loaded car which had been run down to be unloaded struck the car he was in, knocking him through the door in the bottom of car and crushing him on the track.

	8	Wm. Suscavage, ...	Pole, ...	Laborer, ...	33	M.	1	2	Midvale slope, ...	Luzerne,...	Killed by a fall of top coal in Counter gangway. Had broken into an old breast. The miner went across this breast, and while away, the laborer took a pick and undermined the coal, which fell on him.
	9	Victor T. Kemper, ..	Pole, ...	Miner, ...	35	M.	1	3	Mt. Lookout shaft, ..	Luzerne,...	Killed by a premature blast he was firing.
	11	James Ryan, ...	American, .	Driver boss, ...	42	W.	...	3	Midvale slope, ...	Luzerne,...	Killed by a fall of rock on gangway road; a fall had occurred the night before, and Ryan and the timber men were ordered to clean it up, and while doing so a large slab fell on him.
	20	Joseph Popory, ...	Pole, ...	Miner, ...	27	M.	1	....	Langcliffe tunnel, ...	Luzerne,...	Instantly killed by a fall of rock while taking out pillars in Marcy vein.
	21	Anthony Gwalis, ...	Pole, ...	Laborer, ...	21	S.	...	....	Clear Spring shaft, .	Luzerne,...	Killed by a fall of rock at face of breast.
	24	John Griscavage, ...	Pole, ...	Miner, ...	30	S.	...	....	No. 5 shaft, ...	Luzerne,...	Killed by a fall of rock; he fired a blast which knocked out two props, and before restanding them the roof came down on him.
	24	George Polnton, ...	American, .	Slate picker, ...	12	S.	...	....	Avoca breaker, ...	Luzerne,...	Killed by being caught by a revolving shaft. He left his place of work and climbed up to where a line shaft was, and was caught.
Sept.	4	Andrew Badavarich,.	Pole, ...	Miner, ...	27	M.	1	2	Stevens slope, ...	Luzerne,...	Killed by a blast. After waiting a sufficient time for the blast to explode, as he thought, he went back and had reached the face when it exploded.
	11	Roy Metcalf, ...	English, ...	Driver, ...	16	S.	...	....	Stevens slope, ...	Luzerne,...	Fatally burned by an explosion of gas; died next day. The mule he was driving ran away into an old abandoned working; he with another bay followed after the mule and ignited the gas with their open lights.
	10	Michael Barrett, ...	Irish, ...	Pumpman, ...	25	M.	1	5	Hillman slope, ...	Luzerne,...	Fatally scalded by steam; he went up the slope to shut the steam off to repair the pump, and while closing the valve the top of it blew off and the ntire pressure of steam came on him; died the next day.
	24	Michael Kerrigan, ..	American, .	Laborer, ...	38	S.	...	....	Ridgewood slope, ...	Luzerne,...	Killed by fall of rock.
	26	George Morofski, ...	Pole, ...	Laborer, ...	28	S.	...	....	Mount Lookout shaft	Luzerne,...	Fatally injured by fall of rock in Marcy vein. The rock was parted by slips or seams all around; died on the way to hospital.
	26	Paul Swaleus, ...	Pole, ...	Miner, ...	30	M.	1	2	Prospect shaft, ...	Luzerne,...	Fatally burned by powder while preparing a cartridge. He placed his lamp on the edge of box and a spark flew in the powder he was handling. Died the same day.
	29	George Wallace, ...	American, .	Machinist, ...	43	M.	1	5	Twin No. 1 shaft, ..	Luzerne,...	Instantly killed by falling off the bucket in the air shaft while going to work in shaft. How they fell is not known, as when they were ready to be lowered they gave the signal, and almost instantly their bodies struck the bottom.
	29	Joseph Connelly, ...	Irish, ...	Miner, ...	45	M.	1	7	Twin No. 1 shaft, ..	Luzerne,...	

TABLE IV—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
	30	Andrew Koclovitch,	Pole, ...	Laborer, ...	31	M.	1	1	Mt. Lookout shaft, .	Luzerne,...	Killed by falling down the shaft, a distance of 100 feet. He was working on the night shift and descended the shaft and got off the cage on the empty car side and walked about 10 feet away, turned about and walked back, and was told by the footman to keep back, but he kept on and walked into the shaft.
Oct.	2	Thomas Collins, ...	American, .	Runner, ...	25	S.	....	....	Harry E shaft, ...	Luzerne,...	Fatally burned by gas. A steam pipe in the inside slope at the lift burst. Collins shut it off, went through the old workings and ignited some gas which was in a hole in the roof; he died next day.
	3	Michael Batka, ...	Pole, ...	Driver, ...	21	S.	....	....	Exeter No. 2 shaft,	Luzerne,...	Killed by fall of roof while riding on car coming out a breast.
	7	Ignatz Zalesky, ...	Pole, ...	Miner, ...	37	M.	1	....	Exeter No. 1 shaft,	Luzerne,...	The miner was killed and laborer fatally injured by fall of coal at face of their breast. The laborer died Oct. 9.
	7	John Dudash, ...	Austrian, ..	Laborer, ...	43	S.	....	....	Exeter No. 1 shaft,	Luzerne,...	
	9	Peter Patrowsky, ...	Pole, ...	Laborer, ...	20	S.	....	....	Mt. Lookout shaft, ..	Luzerne,...	Killed by fall of rider coal. His miner was drawing back the top bench of coal about 20 inches thick. The laborer went under the rider coal above this bench and it fell on him.
	10	Steve Belock, ...	Pole, ...	Laborer, ...	25	M.	1	....	Chapman shaft, ...	Luzerne,...	Killed by a trip of cars while walking up the inside slope; was told not to do so by another man who came out to manway with him.
	22	William Price, ...	American, .	Track layer,...	35	S.	....	....	No. 9 shaft, ...	Luzerne,...	Killed by a piece of rock falling out of the roof in an abandoned gangway.
	30	Alec Donnell, ...	Pole, ...	Laborer, ...	38	S.	....	....	Twin No. 1 shaft,....	Luzerne,...	Fatally burned by gas; went up to face of breast, having been told by fire boss all was right, and ignited the gas and died the next day. The fire boss said he examined the place and found no gas.

Nov.	15	Adam Koltz,	Pole,	Miner,	31	M.	1	3	Delaware shaft,	Luzerne,...	Fatally burned by gas while going into a cross entrance with an open light, when he should have used a safety lamp.
	16	Stanley Forah,	Slav,	Miner,	50	M.	1	6	Mt. Lookout shaft,	Luzerne,...	Fatally injured by a premature blast before he got to a place of safety; died the next day.
	25	Patrick Gallagher,	Irish,	Laborer,	28	M.	1	....	Laurel Run slope,	Luzerne,...	Fatally injured by fall of rock on gangway road.
Dec.	3	Joe Paulchiskie,	Pole,	Laborer,	34	M.	1	1	Griffith Tunnel,	Luzerne,...	Fatally injured by fall of rock while shoveling coal back from the face of breast; died same day.
	6	Gilbert Parker,	American,	Screen tender,	15	S.	....	....	Exeter washery,	Luzerne,...	Killed; his clothing caught on sett screw of shaft and he was wound around it. He left his place of work and climbed up into a slate schute and under revolving shaft.
	7	Anthony Fauland,	Austrian,	Laborer,	43	M.	1	....	Hallstead, outside,	Luzerne,...	Suffocated by gas from burning culm bank; he was dumping a mine car of rock when the car tipped over, bottom side up; he opened the door of car to pull the rock out, and in doing so got under the bottom of car and was suffocated.
	13	John Brogan,	American,	Driver,	14	S.	....	....	Laws shaft,	Luzerne,...	Killed by being caught between empty car and rib on gangway road.
	17	Patrick Bilbow,	Irish,	Roll tender,	19	S.	....	....	Fernwood breaker,	Luzerne,...	Killed; his clothing caught in machinery of scraper line; left his place of work and climbed on top of machinery which was boxed; his coat went through a crack while he was in stooping position.
	18	Charles Vandozer,	American,	Driver,	15	S.	....	....	No. 8, outside,	Luzerne,...	Killed by being thrown from a mule while riding to the barn; his foot caught in the harness and he was dragged a considerable distance.
	20	Dmytro Fillipchuk,	Pole,	Laborer,	35	M.	1	....	No. 6 shaft,	Luzerne,...	These two laborers were instantly killed at same time by a fall of soapstone in the airway while taking it down.
	20	John Ambrozitchuk,	Pole,	Laborer,	29	M.	1	....	No. 6 shaft,	Luzerne,...	
	21	Neil Ross,	Italian,	Oiler,	17	S.	....	....	Ewen breaker,	Luzerne,...	Smothered in culm schute. After the breaker stopped for the day, Ross and another bay tried to push the culm down, and he was caught in the rush.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Third Anthracite District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	3	Wm. Earley,	Irish	Fire boss,	32	M.	Laurel Run slope,	Luzerne,	Overcome by gases from mine fire in Delaware shaft.
	5	Edward Garrihan,	American,	Laborer,	20	S.	No. 14 tunnel,	Luzerne,	Face and hands burned by gas.
	10	Joseph Covode,	Irish,	Miner,	51	M.	Langcliffe tunnel,	Luzerne,	Ribs broken by coal from a runaway car.
	10	Frank Kordaski,	Pole,	Miner,	40	M.	Wyoming shaft,	Luzerne,	Severely injured by a premature blast.
	14	Simon Wasecaius,	Lithuanian,	Laborer,	24	M.	Exeter No. 1 shaft,	Luzerne,	Back injured by fall of rock.
	16	Matt Gemotoweitz,	Lithuanian,	Miner,	29	S.	No. 5 shaft,	Luzerne,	Face and hands burned by gas.
	16	Mike Corcoran,	Irish,	Laborer,	35	S.	No. 5 shaft,	Luzerne,	Head and hands bruised by fall of rock.
	18	Gurlyn Amos,	Welsh,	Driver,	17	S.	Pettebone shaft,	Luzerne,	Leg broken while taking sprag out of car wheel.
	25	John Luke,	English,	Miner,	40	M.	Pine Ridge shaft,	Luzerne,	Foot crushed by fall of fire clay.
	28	Clement Martiscavage,	Pole,	Miner,	38	M.	Harry E shaft,	Luzerne,	Burned on face and hands by gas; They opened their safety lamps against orders.
	28	Joseph Polach,	Pole,	Laborer,	34	S.	Harry E shaft,	Luzerne,	
	29	Thomas Mitchell,	English,	Miner,	31	M.	Pettebone shaft,	Luzerne,	Back broken by coal falling from pillar at face of breast.
	30	Joseph Fushandy,	Italian,	Laborer,	23	M.	Fernwood shaft,	Luzerne,	Slightly injured by the explosion of dynamite that his miner was handling, which killed the miner.
Feb.	7	Laiis Syloeskie,	Pole,	Miner,	34	M.	Mt. Lookout shaft,	Luzerne,	Face and hands burned by gas.
	8	Matt Brennen,	Irish,	Driver,	15	S.	Barnum No. 3 shaft,	Luzerne,	Ribs broken; struck by car.
	8	Joseph Wasley,	American,	Laborer,	26	M.	No. 14 tunnel,	Luzerne,	Collar bone broken while spragging a car.
	12	Edward Toole,	Irish,	Team driver,	20	S.	Consolidated slope,	Luzerne,	Leg broken; struck by a car.
	12	John Rowan,	Russian,	Miner,	37	M.	Oakwood shaft,	Luzerne,	Severely bruised by a fall of rock.
	12	Paul Cosack,	Russian,	Laborer,	23	M.	Oakwood shaft,	Luzerne,	
	15	Thomas Haistie,	Scotch,	Miner,	41	M.	Barnum No. 3 shaft,	Luzerne,	Severely bruised by a fall of rock.
	15	Daniel Mulroney,	American,	Driver,	17	S.	Pine Ridge shaft,	Luzerne,	Leg crushed while attempting to jump on cars.
	18	Thos. D. Rowland,	Welsh,	Fire boss,	42	M.	Langcliffe shaft,	Luzerne,	Face cut and bruised by coal from a blast.

	18	Jas. Mongenell,	Italian,	Miner,	24	M.	Butler tunnel,	Luzerne,	Struck on stomach by end of rail while assisting to put car on track.
	18	Stanley Lickoski,	Pole,	Laborer,	24	S.	No. 6 shaft,	Luzerne,	Slightly burned on face and hand by gas.
	19	Austin Mulcahey,	American,	Laborer,	18	S.	No. 4 shaft,	Luzerne,	Skull fractured by coal from blast.
	25	Steve Pastor,	Slav,	Miner,	37	M.	Prospect shaft,	Luzerne,	Severely cut and bruised by fall of coal.
	26	Edward Eustice,	American,	Driver,	16	S.	No. 6 shaft,	Luzerne,	Leg broken by plane rope.
March	1	Robert Bainbridge,	American,	Laborer,	31	M.	Hallstead shaft,	Luzerne,	Fingers crushed by pump.
	5	Adam Rice,	Pole,	Driver,	19	S.	Prospect shaft,	Luzerne,	Back bruised; fell under cars.
	7	Lewis Baynak,	Pole,	Door boy,	15	S.	Maltby shaft,	Luzerne,	Hips and back bruised; caught between car and brattice.
	9	John Bennett,	American,	Slate picker,	13	S.	Consolidated breaker,	Luzerne,	Caught by sett screw on shaft in breaker.
	9	Henry Tucker,	American,	Driver,	37	M.	Mt. Lookout shaft,	Luzerne,	Injured between car and brattice.
	14	James Brown,	English,	Miner,	28	M.	Katy Did slope,	Luzerne,	Burned by powder which he was forcing in drill hole.
	16	John T. Price,	Welsh,	Driver,	21	S.	Elmwood, outside,	Luzerne,	Leg broken; while spragging culm car.
	20	Andrew Scrockman,	Hungarian,	Laborer,	22	S.	Black Diamond shaft,	Luzerne,	Head cut by fall of rock.
	20	John Gorski,	Pole,	Laborer,	24	S.	Louise slope,	Luzerne,	Head cut by a fall of rock.
	22	James Phillips,	American,	Laborer,	46	M.	Mt. Lookout, outside,	Luzerne,	Leg crushed between car bumpers.
	26	Michael Williams,	Slav,	Miner,	41	M.	Prospect shaft,	Luzerne,	Face burned by powder while carrying cartridge.
	29	John Williams,	Welsh,	Miner,	45	M.	Ridgwood slope,	Luzerne,	Painfully bruised by fall of rock.
April	4	S. P. Bellas,	American,	Laborer,	28	M.	Maltby, outside,	Luzerne,	Painfully bruised by culm sliding from bank on him.
	9	Peter Markalinas,	Pole,	Miner,	29	M.	Exeter No. 1 shaft,	Luzerne,	Head cut by fall of rock.
	9	Michael Cotcavage,	Slav,	Laborer,	33	M.	Harry E shaft,	Luzerne,	Back bruised by fall of rock.
	10	Stanley Krupinsky,	Pole,	Driver,	14	S.	Fernwood shaft,	Luzerne,	Jaw broken by gin pole breaking and striking him.
	15	Adam Latch,	Pole,	Miner,	35	M.	Pine Ridge shaft,	Luzerne,	Face and hands burned by gas.
	17	Chas. Feathers,	German,	Miner,	45	M.	Louise slope,	Luzerne,	Body bruised by coal from blast.
	17	Steve Matura,	Slav,	Laborer,	18	S.	Mt. Lookout shaft,	Luzerne,	Face and hand burned by gas.
	21	Wm. Davies,	American,	Laborer,	35	M.	East Boston shaft,	Luzerne,	Finger cut off while lifting coal into car.
	23	Robert Whitley, Jr.,	American,	Driver,	18	S.	Mt. Lookout shaft,	Luzerne,	Ankle and arm sprained; fell under cars.
	25	Thos. Moore,	American,	Miner,	32	M.	No. 4 shaft,	Luzerne,	Severely injured by a premature blast.
	25	Wm. Tilley,	Welsh,	Miner,	43	M.	No. 4 shaft,	Luzerne,	
	25	Thomas M. Jones,	American,	Miner,	55	W.	Ridgewood slope,	Luzerne,	Thigh broken by fall of rock.
	29	Frank Zavelinski,	Pole,	Slate picker,	14	S.	Langcliffe breaker,	Luzerne,	Foot and ankle broken; caught in sprocket wheel.
	29	Wm. Robertson,	American,	Driver,	20	S.	Exeter No. 1 slope,	Luzerne,	Hips severely squeezed; was leaning over car and was struck by door frame.
May	1	Michael Smith,	American,	Driver,	17	S.	Pine Ridge shaft,	Luzerne,	Knee cut by car.
	3	John Clark,	American,	Driver,	16	S.	Langcliffe shaft,	Luzerne,	Kicked by mule he was hitching to a car.

TABLE V—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
7	Patrick Sharp,	Irish,	Trackman,	42	S.	Henry shaft,	Luzerne,	These men were severely burned by the explosion of 8 kegs of powder. While hoisting the powder in a car up Gravity plane, the brake broke, allowing the trip to run away; the empty cars struck the drum with such force as to explode the powder.
7	John S. Burke,	Irish,	Plane headman,	32	M.	Henry shaft,	Luzerne,	
7	James Burke,	Irish,	Driver,	18	S.	Henry shaft,	Luzerne,	
8	John Botoha,	Slav,	Miner,	27	S.	Harry E shaft,	Luzerne,	Face and hands cut by coal from blast.
9	James Osborne,	Irish,	Miner,	36	M.	Consolidated slope,	Luzerne,	Leg broken by fall of coal.
10	August Zurander,	Slav,	Miner,	24	M.	Exeter No. 2 shaft,	Luzerne,	Leg broken by coal from blast.
14	John Pawlonski,	Pole,	Laborer,	44	M.	Hallstead shaft,	Luzerne,	Painfully squeezed by cars.
15	Angelo Lucerelo,	Italian,	Miner,	24	S.	Stevens shaft,	Luzerne,	Leg broken by fall of rock.
15	Theophilus Evans,	Welsh,	Runner,	23	S.	Pettebone shaft,	Luzerne,	Body painfully bruised while running car.
22	Frank Judge,	American,	Runner,	23	S.	Laurel Run slope,	Luzerne,	Painfully squeezed while riding between cars.
23	Michael Apple,	Hungarian,	Laborer,	40	M.	Forty Fort shaft,	Luzerne,	Leg bruised while cleaning track.
27	John Hashlinsky,	Slav,	Laborer,	40	S.	Exeter No. 2 shaft,	Luzerne,	Leg broken by fall of rock.
June 8	Frank D. Juda,	Lithuanian,	Laborer,	20	S.	Oakwood shaft,	Luzerne,	Arm broken while riding on cars.
11	Thomas Scott,	American,	Shaft footman,	43	S.	No. 6 shaft,	Luzerne,	Leg broken by prop timber while taking it off cage.
13	Peter Elm,	Austrian,	Miner,	27	M.	Langcliffe shaft,	Luzerne,	Hand blown off at wrist while handling a stick of dynamite.
15	John Cabore,	American,	Door boy,	15	S.	East Boston shaft,	Luzerne,	Leg broken while uncoupling cars.
24	Patrick Flynn,	Irish,	Miner,	45	M.	Pettebone shaft,	Luzerne,	Skull fractured and ribs broken by premature blast.
25	Thos. Miles,	American,	Miner,	32	S.	No. 9 shaft,	Luzerne,	Head cut and chest bruised by premature blast.
28	Michael Goydoes,	Hungarian,	Slate picker,	13	S.	East Boston breaker,	Luzerne,	Arm painfully cut; knocked from railroad car.
28	Edward Jones,	Welsh,	Laborer,	35	S.	Exeter No. 1 shaft,	Luzerne,	Body severely bruised by fall of rock.

July	2	Wm. Anthony,	American,	Driver,	14	S.	No. 10 breaker,	Luzerne,	Leg cut; fell off under car.
	3	Wm. Stewart,	German,	Driver,	15	S.	No. 3 shaft, Barnum,	Luzerne,	Hips squeezed; fell in front of cars.
	3	Edward Carter,	American,	Door tender,	15	S.	No. 9 shaft,	Luzerne,	Leg crushed by car, necessitating amputation.
	3	Frank Salos,	Hungarian,	Door tender,	19	S.	Maltby tunnel,	Luzerne,	Leg broken; struck by car.
	12	John Dando,	Slav,	Laborer,	42	S.	Exeter No. 2 shaft,	Luzerne,	Head cut; a piece of coal fell on him.
	12	Joseph Berton,	English,	Miner,	51	M.	East Boston shaft,	Luzerne,	Head cut and rib broken by coal falling on him.
	15	Joseph Mehoyt,	Slav,	Laborer,	37	S.	Exeter No. 2 shaft,	Luzerne,	Burned on face and hands by gas.
	15	Dennis Rabbet,	American,	Runner,	23	S.	Exeter No. 2 shaft,	Luzerne,	Caused by the runners leaving a door open on gangway road while running car out of a breast.
	15	Edward Davies,	American,	Runner,	24	S.	Exeter No. 2 shaft,	Luzerne,	
	26	John Mulrey,	American,	Driver,	15	S.	No. 6 shaft,	Luzerne,	Leg broken; kicked by a mule.
	31	Joseph Watkins,	Welsh,	Miner,	44	M.	Stevens slope,	Luzerne,	Burned on face and hands by gas while lighting fuse to fire a blast.
	31	Joseph Stanouski,	Pole,	Laborer,	23	S.	Stevens slope,	Luzerne,	
Aug.	1	George Cadwalader,	American,	Miner,	45	M.	East Boston shaft,	Luzerne,	Head cut by fall of rock.
	1	Michael Larence,	Slav,	Miner,	27	M.	Maltby slope,	Luzerne,	Head and body cut by coal from blast.
	1	Clarence Miles,	American,	Door tender,	14	S.	Barnum No. 2 shaft,	Luzerne,	Head squeezed between cars while passing between them.
	3	Paul Zetterman,	Pole,	Runner,	23	S.	Black Diamond shaft,	Luzerne,	Head bruised by car jumping track on him.
	5	Frank Prucavich,	Lithuanian,	Miner,	36	M.	East Boston shaft,	Luzerne,	The miners leg was broken and laborers head cut by fall of coal in breast.
	5	Ignatz Slolins,	Lithuanian,	Laborer,	34	M.	East Boston shaft,	Luzerne,	
	5	Anthony Bastus,	Pole,	Miner,	26	M.	Stevens slope,	Luzerne,	Face and hands slightly burned by gas ignited by one of them opening his safety lamp.
	5	Fred Buckweith,	English,	Runner,	19	S.	Stevens slope,	Luzerne,	
	8	Joseph Williams,	American,	Runner,	19	S.	Oakwood shaft,	Luzerne,	Body severely bruised by falling under a car.
	12	Leo Delmore,	American,	Runner,	16	S.	Barnum breaker,	Luzerne,	Hand cut and bruised while spragging cars.
	12	Richard White,	American,	Miner,	32	M.	Griffith tunnel,	Luzerne,	Leg bruised by a piece of coal sliding on him.
	17	Wm. Weitz,	American,	Culm driver,	16	S.	No. 8 breaker,	Luzerne,	Leg cut and bruised; fell from culm car.
	20	John Kubachklo,	Pole,	Miner,	33	S.	Langcliffe tunnel,	Luzerne,	Head bruised by fall of rock.
	21	Edward McDonald,	American,	Laborer,	22	S.	Consolidated slope,	Luzerne,	Leg broken by fall of soapstone.
	21	John Morgan,	Welsh,	Brattice man,	37	M.	Exeter No. 2 shaft,	Luzerne,	Hand cut by piece of rock falling on it.
	21	Wm. Dougherty,	American,	Driver,	16	S.	Exeter No. 2 shaft,	Luzerne,	Thigh broken; kicked by mule.
	24	Albert Slassick,	Pole,	Roll tender,	20	S.	Fernwood breaker,	Luzerne,	Hand crushed in gear wheels; put his hand down to schute to clean it, instead of using a broom.
	26	Wm. Loftus,	American,	Slate picker,	17	S.	No. 6 breaker,	Luzerne,	Painfully bruised; fell into coal schute.
	26	Michael Kertlsick,	Slav,	Miner,	25	M.	Midvale slope,	Luzerne,	Severely bruised by fall of coal.
	28	Tofil Zelniski,	German,	Miner,	42	M.	Langcliffe shaft,	Luzerne,	Leg broken and body bruised by fall of coal.
	28	Clarence Robertson,	American,	Driver,	16	S.	No. 11 shaft,	Luzerne,	Kicked on head by mule.
Sept.	4	John Zeluskes,	Pole,	Miner,	39	M.	Exeter No. 2 shaft,	Luzerne,	Head and back cut by a fall of top coal.
	5	Travor Jones,	American,	Door boy,	15	S.	Pettebone shaft,	Luzerne,	Hand crushed between car bumpers.

TABLE V—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
5	Wm. French,	English,	Miner,	46	M.	Stevens slope,	Luzerne,	Leg broken while running to sprag a car.
11	Wm. Barth,	American,	Driver,	18	S.	No. 10 shaft, Jr.,	Luzerne,	Slightly burned by gas on face.
13	Peter Kemmy,	Irish,	Miner,	41	M.	Black Diamond shaft,	Luzerne,	Head and shoulders bruised by fall of rock.
14	Eno Kusloski,	Pole,	Miner,	43	M.	No. 7 shaft,	Luzerne,	Head cut by fall of coal.
16	James Armstrong,	Irish,	Miner,	46	M.	Consolidated slope,	Luzerne,	Wrist and three ribs broken by a fall of coal.
17	Joseph Inchuk,	Slav,	Laborer,	29	M.	Forty Fort shaft,	Luzerne,	Face and hands burned by gas.
17	Edward Oser,	Austrian,	Laborer,	22	S.	Pettebone shaft,	Luzerne,	Hips squeezed; jumped from a trip of cars.
20	Frank Davis,	English,	Shaft footman,	44	M.	Laws shaft,	Luzerne,	Body painfully squeezed by cage.
26	Joseph Mackeavige,	Pole,	Miner,	46	M.	No. 11 shaft,	Luzerne,	Face and leg cut by coal from a blast.
27	Edward Lessavage,	Slav,	Driver,	17	S.	Prospect shaft,	Luzerne,	Leg cut by wheel of car.
Oct. 3	Richard Harding,	American,	Driver,	18	S.	Henry shaft,	Luzerne,	Ankle sprained; foot caught on rail while sliding along.
4	Peter Savage,	Pole,	Miner,	35	M.	Bernice drift,	Sullivan,	Painfully bruised about the body by fall of coal.
4	John Grossel,	German,	Miner,	46	M.	Langcliffe shaft,	Luzerne,	Head cut by cap piece.
4	Patrick Duddy, Jr.,	Irish,	Driver,	16	S.	Wyoming shaft,	Luzerne,	Leg broken; mule kicked him.
9	John Kromlak,	Slav,	Laborer,	35	M.	Mt. Lookout shaft,	Luzerne,	Leg broken; while cleaning along side of air pipe on gangway it struck his leg.
9	Michael Wywada,	Lithuanian,	Miner,	30	M.	Barnum No. 2 shaft,	Luzerne,	Ribs fractured and leg bruised; struck by coal from a blast.
12	Joseph Hughes,	American,	Machinist,	41	M.	Pettebone, outside,	Luzerne,	Head and back bruised by falling down well.
15	Joseph Dierytus,	Pole,	Miner,	40	M.	Langcliffe shaft,	Luzerne,	Head and legs severely bruised by fall of rock.
17	Charles Cook,	Irish,	Miner,	42	M.	Pettebone shaft,	Luzerne,	Body painfully bruised by fall of rock at face of breast.
19	Wm. Tucker,	American,	Runner,	18	S.	No. 4 shaft,	Luzerne,	Eye destroyed by a kick from a mule.

	22	Alex Welda,	Pole,	Laborer,	26	S.	Louise tunnel,	Luzerne,	Leg. broken and back bruised by fall of rock.
	25	John Vono,	Slav,	Oiler,	36	M.	Barnum breaker,	Luzerne,	Leg broken while handling sheet iron in breaker; it fell on him.
	25	Joseph Kaledo,	Slav,	Miner,	25	S.	Mt. Lookout shaft,	Luzerne,	Face and hands burned by powder.
	26	Peter Methsky,	Pole,	Miner,	40	M.	Clear Spring shaft,	Luzerne,	Arm broken by a blast.
	28	John Gibbons,	American,	Driver,	16	S.	East Boston shaft,	Luzerne,	Arm broken; mule fell on him.
	28	Henry Hope,	Scotch,	Driver,	17	S.	Pine Ridge shaft,	Luzerne,	Leg broken while unhitching his mule from car; mule turned and caught the drivers leg against car.
Nov.	4	Daniel Daley,	American,	Door boy,	15	S.	Harry E shaft,	Luzerne,	Foot crushed; caught between car bumpers.
	7	Tofil Zilinski,	German,	Miner,	42	M.	Langcliffe shaft,	Luzerne,	Head and body squeezed by cage.
	8	George Bleweysky,	Pole,	Miner,	44	W.	Laurel Run slope,	Luzerne,	Head and legs cut by coal from a blast.
	9	Michael Murphy,	Irish,	Miner,	53	M.	Pettebone shaft,	Luzerne,	Ribs broken by coal from blast.
	11	Con. Boyle,	Irish,	Blacksmith,	35	M.	Pettebone shaft,	Luzerne,	Hips bruised by a mule falling on him while shoeing it.
	11	Wm. Walker,	American,	Laborer,	52	M.	Pettebone,	Luzerne,	Ribs broken by falling from car.
	13	Edward Connors,	Irish,	Driver,	16	S.	Consolidated slope,	Luzerne,	Painfully squeezed by falling under cars.
	15	John Danshie,	Pole,	Laborer,	28	S.	Avoca shaft,	Luzerne,	Leg broken by coal coming down schute.
	16	Patrick McCabe,	Irish,	Miner,	64	S.	Harry E. shaft,	Luzerne,	Back and legs cut by coal from a blast.
	16	Patrick Donnelly,	Irish,	Driver,	18	S.	Morning Star tunnel,	Luzerne,	Leg broken by falling under cars.
	19	Joseph Macputa,	Pole,	Miner,	37	M.	No. 11 shaft,	Luzerne,	Leg broken by a fall of rock.
	22	Joseph Jolus,	Pole,	Laborer,	21	S.	Stevens slope,	Luzerne,	These seven men were more or less severely burned by an explosion of gas. When the explosion took place all the men were using safety lamps. In my examination I found a safety lamp opened in a cross cut, which no doubt was the cause of explosion.
	22	George Wagolis,	Pole,	Laborer,	26	S.	Stevens slope,	Luzerne,	
	22	John Goditshus,	Pole,	Laborer,	24	S.	Stevens slope,	Luzerne,	
	22	Henry Powell,	Welsh,	Fire boss,	43	M.	Stevens slope,	Luzerne,	
	22	Adam Pladis,	Pole,	Miner,	24	S.	Stevens slope,	Luzerne,	
	22	George Chisick,	Pole,	Miner,	31	S.	Stevens slope,	Luzerne,	
	22	Mike Trackomovich,	Pole,	Miner,	28	S.	Stevens slope,	Luzerne,	
	25	Oscar Ostrander,	American,	Jig tender,	16	S.	Ridgewood breaker,	Luzerne,	Leg broken while attempting to ride on scraper line.
	25	Domnick Lavell,	Irish,	Driver,	25	S.	Delaware shaft,	Luzerne,	Leg broken; kicked by a mule.
	25	Frank Roufkosky,	Pole,	Laborer,	26	S.	Forty Fort shaft,	Luzerne,	Leg broken by fall of rock.
	29	Frank Hoffman,	American,	Miner,	43	M.	Black Diamond shaft,	Luzerne,	Leg broken by fall of rock.
	29	Martin Tomolis,	Lithuanian,	Miner,	45	M.	Exeter No. 1, shaft,		Leg broken by fall of top coal.
Dec.	2	Henry Bowket,	English,	Miner,	40	M.	Avoca shaft,	Luzerne,	Leg and ribs broken by fall of soapstone.
	4	Frank Meke,	Slav,	Laborer,	26	S.	Langcliffe tunnel,	Luzerne,	Leg and arm broken by fall of coal.
	4	Owen McLane,	Irish,	Miner,	56	M.	No. 10 shaft,	Luzerne,	Both legs broken by premature blast.
	9	Richard Wilkinson,	English,	Miner,	47	M.	No. 5 shaft,	Luzerne,	Face and hands burned by gas.
	10	Cosmero Pizeneskie,	Italian,	Miner,	41	W.	Stevens shaft,	Luzerne,	Arm broken and hip dislocated by fall of rock.
	10	Matt Karsinskie,	Russian,	Miner,	45	M.	Hillman slope,	Luzerne,	Face and hands burned by gas.

TABLE V—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
14	John Robmasow,	Slav,	Miner,	35	M.	Mt. Lookout shaft,	Luzerne,	These three men were severely burned by gas by going into their breast in the morning against the fire bosses orders.
14	Martin Stabow,	Slav,	Laborer,	27	M.	Mt. Lookout shaft,	Luzerne,	
14	John Parington,	American,	Driver,	21	S.	Mt. Lookout shaft,	Luzerne,	
17	Frank Stanford,	Irish,	Co. laborer,	55	M.	Louise slope,	Luzerne,	Face cut and bruised by rail while putting car on track.
18	John Lashko,	Pole,	Ash wheeler,	34	M.	Prospect, outside,	Luzerne,	Foot crushed by wheel of ash car.
20	Mike Ambrozitchuk,	Pole,	Miner,	30	M.	No. 6 shaft,	Luzerne,	Leg and arm broken by fall of rock.
27	Patrick McAndrew,	Irish,	Driver,	16	S.	Pettebone shaft,	Luzerne,	Arm broken while riding on car; caught on collar on gangway.
30	Chas. Guravich,	Pole,	Miner,	37	M.	Midvale slope,	Luzerne,	Hip dislocated by fall of top coal.

Fourth Anthracite District.

LUZERNE COUNTY.

Office of Inspector of Mines,
Wilkes-Barre, Pa., February 18, 1902.

Hon. James W. Latta, Secretary of Internal Affairs, Harrisburg, Pa.:

Sir: I have the honor herewith of submitting to you the annual report of the Fourth Anthracite District for the year ending December 31, 1901. I entered upon the duties of the office on the 25th of September, 1901, and have scarcely had time to become acquainted with the localities of the different mines in the district. The report contains the usual tabular statements of mine accidents, the quantity of coal produced, number of each class of employes and other useful memoranda.

Production of coal in tons for 1901,	9,891,332
Number of employes for 1901,	24,317
Average number of days worked in 1901,	191.07
Number of fatal accidents in 1901,	78
Number of non-fatal accidents in 1901,	322
Number of wives left widows in 1901,	53
Number of orphans in 1901,	126
Tons of coal mined per life lost in 1901,	126,812
Increase of production per life lost above that of 1900,	5,886
Number of citizens fatally injured in 1901,	56
Number of aliens fatally injured in 1901,	22
Number of citizens seriously injured in 1901,	194
Number of aliens seriously injured in 1901,	128
Increase of production as compared with that of 1900,	1,305,591

I have also included a short description of the explosion at the Buttonwood colliery of the Parrish Coal Company; also of the improvements made at the various mines throughout the district. The mines in general are in excellent condition, and are well ventilated.

Very respectfully,
E. E. REYNOLDS,
Inspector.

Production of Coal in Tons for the Year 1901, by the Several Companies.

Lehigh and Wilkes-Barre Coal Company,	2,883,213.09
Delaware and Hudson Canal Company,	1,447,915.10
Susquehanna Coal Company,	1,309,222.00
Kingston Coal Company,	954,545.00
Delaware, Lackawanna and Western Railroad Company,	992,746.11
Lehigh Valley Coal Company,	461,038.16
Red Ash Coal Company,	250,584.13
Parrish Coal Company,	633,832.08
Alden Coal Company,	265,592.17
West End Coal Company,	99,636.02
Warrior Run Coal Company,	175,667.07
Crescent Coal Mining Company,	500.00
Plymouth Coal Company,	138,834.04
Ayers and Brothers (Chauncey),	13,582.08
Sterling Coal Company Washery,	42,605.00
Total,	9,669,516.05

This Production is Divided as Follows.

Shipped to market by railroad,	8,840,663.06
Sold at mines for local use,	289,027.14
Used at mines for generating steam,	541,363.05
Total,	9,669,516.05

TABLE A—Showing number of lives lost, tons of coal produced per life lost, and per person injured, number of employes and number of employes per life lost and per person injured in 1901.

Names of Operators.	Number of lives lost.	Tons of coal produced per life lost.	Number of persons seriously injured.	Tons of coal produced per person seriously injured.	Number of persons employed.	Number employes per life lost.	Number of employes per person seriously injured.
Lehigh and Wilkes-Barre Coal Co.,	21	137,296	131	22,009	6,185	294.5	47.5
Delaware and Hudson Canal Co.,	6	241,319	27	53,627	3,834	639	142
Susquehanna Coal Co.,	10	130,922	72	18,183	4,064	406.4	56.4
Kingston Coal Co.,	9	106,961	15	63,636	2,300	255.3	153.1
Delaware, Lackawanna and Western Railroad Co.,	5	198,549	30	33,092	2,483	596.6	99.4
Lehigh Valley Coal Co.,	5	92,208	6	76,839	1,028	205.6	171.3
Red Ash Coal Co.,	3	83,528	7	35,798	557	186	79.6
Parrish Coal Co.,	10	63,383	13	48,756	1,519	151.9	116.8
Alden Coal Co.,	4	66,398	2	132,796	615	153.7	307.5
West End Coal Co.,	2	49,818	4	24,909	489	245.5	122.8
Warrior Run Coal Co.,	1	175,667	9	19,519	432	432.0	48
Crescent Coal Mining Co.,	....	....	....	....	210	....	....
Plymouth Coal Co.,	1	138,834	5	27,767	429	429.0	85.8
Ayers and Bros. (Chauncey),	1	13,582	1	13,582	150	150.0	150.0
Sterling washery,	....	....	....	....	22	....	....
Total,	78	123,968	322	30,030	24,317	311.8	75.5

Classification of Fatal and Non-Fatal Accidents.

Causes of Accidents.	Fatal.	Non-fatal.
By explosions of fire damp,	16	52
By falls of roof and coal,	28	104
By mine cars in the mines,	12	59
By explosions of powder and blasts.	6	20
By falling down shafts,	1	....
From miscellaneous causes in the mines,	6	46
From miscellaneous causes on the surface,	9	40
Total,	78	322

In addition to the above there were 188 slight accidents reported which were not included.

TABLE B—Classification of fatal accidents in the Fourth Anthracite District for the year 1901.

1901.	Causes of Fatal Accidents.								Occupations of Persons Fatally Injured.										Nationality of Persons Fatally Injured.									
	Explosions of gas.	Falls of roof and coal.	By mine cars.	Explosions of powder and blasts.	Falling down shafts.	Miscellaneous, inside.	Miscellaneous, outside.	Total.	Miners.	Laborers.	Drivers.	Runners.	Door tenders.	Timber and brattice men.	Inside company men.	Engineers.	On surface.	Total.	American.	Austrian.	Slav.	Pole.	Lithuanian.	English.	Welsh.	Irish.	German.	Total.
January,	1	4	....	....	....	....	1	6	1	3	....	....	....	....	1	....	1	6	3	1	1	1	....	....	....	....	....	6
February,	....	3	1	1	....	....	....	5	4	....	....	....	1	....	....	....	....	5	1	....	....	1	1	2	....	....	....	5
March,	2	1	3	....	1	....	1	8	3	....	....	....	1	1	2	1	....	8	2	....	....	3	1	....	1	1	....	8
April,	1	....	1	....	....	....	....	2	1	....	....	....	....	....	1	....	....	2	....	....	....	1	1	....	....	....	....	2
May,	1	2	....	1	....	2	....	6	4	1	1	....	....	....	....	....	....	6	....	....	....	2	1	1	....	2	....	6
June,	....	3	....	....	....	....	....	3	2	1	....	....	....	....	....	....	....	3	1	....	....	....	2	....	....	....	....	3
July,	1	3	....	....	....	....	....	4	2	1	....	....	....	1	....	....	....	4	2	....	....	1	....	....	1	....	....	4
August,	2	6	2	....	....	1	....	11	6	2	1	1	....	1	....	....	....	11	3	....	....	4	1	1	....	1	1	11
September,	....	1	3	....	....	1	1	6	1	....	1	....	1	....	2	....	1	6	2	....	1	....	....	1	2	....	....	6
October,	8	1	....	2	....	1	1	13	1	3	1	....	....	....	7	....	1	13	2	....	1	3	....	2	4	1	....	13
November,	....	4	2	1	....	1	2	10	3	3	1	....	....	....	1	....	2	10	4	....	1	3	....	1	....	1	....	10
December,	....	....	....	1	....	....	3	4	1	....	....	....	....	....	....	....	3	4	1	....	....	1	....	....	....	2	....	4
Total,	16	28	12	6	1	6	9	78	29	14	5	1	3	3	14	1	8	78	21	1	4	20	7	8	8	8	1	78

TABLE C—Classification of serious non- fatal accidents.

1901.	Causes of Non-Fatal Accidents.							Occupations of Persons Seriously Injured.										Nationality of Persons Seriously Injured.										
	Explosions of gas.	Falls of roof and coal.	By mine cars.	Explosions of powder and blasts.	Miscellaneous, inside.	Miscellaneous, outside.	Total.	Miners.	Laborers.	Drivers.	Runners.	Door tenders.	Timber and brattice men.	Inside company men.	Engineers.	On surface.	Total.	American.	Austrian.	Slav.	Pole.	Lithuanian.	English.	Welsh.	Irish.	German.	Italian.	Total.
January,	6	11	8	4	4	3	36	12	11	4	1	2	....	3	....	3	36	6	....	1	14	5	3	4	3	....	....	36
February,	1	4	3	1	3	2	14	6	3	2	....	1	....	....	....	2	14	1	....	....	9	....	....	3	....	1	....	14
March,	11	11	10	2	4	2	40	18	8	4	2	....	....	6	....	2	40	6	....	1	20	3	....	6	2	2	....	40
April,	1	10	3	1	7	4	26	7	6	1	1	1	1	4	1	4	26	8	....	2	9	....	....	1	5	1	....	26
May,	2	10	1	2	6	3	24	11	5	1	....	1	....	2	1	3	24	4	....	1	11	1	3	3	1	....	....	24
June,	5	9	6	1	1	5	27	10	6	2	....	2	....	2	....	5	27	3	2	1	7	3	2	3	3	2	1	27
July,	....	4	5	4	3	2	18	8	4	1	....	....	....	3	....	2	18	3	....	2	5	2	3	....	2	1	....	18
August,	6	13	4	2	2	9	36	17	8	1	1	....	....	....	....	9	36	4	....	2	13	4	....	2	3	8	....	36
September,	5	10	4	....	3	2	24	10	7	1	....	2	....	2	....	2	24	9	....	1	7	1	1	4	....	....	1	24
October,	9	14	9	2	6	1	41	15	9	7	....	2	1	6	....	1	41	8	1	1	15	4	2	4	5	1	....	41
November,	4	5	3	1	2	1	16	5	4	2	2	2	....	....	....	1	16	7	....	....	5	1	1	....	2	....	....	16
December,	2	3	3	....	5	7	20	4	3	2	....	1	....	3	....	7	20	9	1	....	3	2	....	3	1	1	....	20
Total,	52	104	59	20	46	41	322	123	74	28	7	14	2	31	2	41	322	68	4	12	118	25	15	33	27	17	2	322

TABLE D—Showing the quantity of air circulating through the mines of the Fourth Anthracite District at the end of the year 1901.

Name of Mine.	Kind of Fan.	Diameter—feet.	Revolutions per minute.	Water gauge at fan—inches.	Number of fans.	Number of splits.	Number of persons employed.	Cubic feet of air per minute at inlet.	Cubic feet of air per minute at face of workings.	Cubic feet of air per minute at outlet.
Hollenback No. 2,	Guibal,	35	50	1.25	4	9	376	252,680	227,240	266.240
South Wilkes-Barre No. 3,	Guibal,	35	45	2	1	10	374	220,000	118,700	244.300
South Wilkes-Barre No. 5,	Guibal.	35	45	2	1	10	308	129,200	96,100	144,880
Stanton No. 7,	Guibal,	24	65	1.6	3	14	460	336,550	307,550	361,300
Sugar Notch No. 9,	Guibal,	24	66	1.2	2	9	368	325,000	257,900	350,400
Lance No. 11,	Guibal,	35	49	2	3	10	409	429,850	331,700	483,700
Nottingham No. 15,	Guibal.	24	70	1.6	5	9	670	302,000	258,300	340,000
Reynolds No. 16,	Guibal	24	68	2	1	6	292	105,070	54,900	108.150
Wanamie No. 18,	Guibal,	18	72	0.6	3	7	301	100,950	85,550	107,000
Maxwell No. 20,	Guibal,	24	80	1.5	2	6	109	96,900	77,700	105,850
Maxwell No. 20,	Guibal,	35	40	1.5	2	10	474	337,300	300,520	351,040
Total Lehigh and Wilkes-Barre,					27	100	4,141	2,635.500	2,116,160	2,862,860
Baltimore No. 2,	Guibal,	18	84	2.50	2	4	250	156,150	89,900	162,400
Baltimore No. 3,	Guibal,	18	80	1 25	1	5	225	174,200	86,950	180.400
Baltimore No. 4,	Guibal,	16	70	1.10	1	7	155	120,560	89,120	130,220
Conyngham No. 1,	Guibal,	17	90	1.60	1	4	153	150,560	139,000	180,200
Conyngham No. 2,	Guibal,	20	80	1.80	1	3	143	84,450	80,550	88,420
Boston,	Guibal,	22	60	2.00	1	6	226	105,940	88,180	106.160
Plymouth No. 2,	Guibal,	28	70	2.70	2	7	357	296,500	182,700	312,300
Plymouth No. 3,	Guibal,	19	55	1.60	3	8	390	278,430	246,820	284,330
Plymouth No. 4,	Guibal,	17	114	1.80	1	4	237	145,050	121,400	162,900
Plymouth No. 5,	Guibal,	22	75	2.70	1	8	221	164,000	148,000	179,000
Total D. and H. Canal Co.,					14	56	2,357	1,675,840	1,272,620	1,786,330

TABLE D—Continued.

Name of Mine.	Kind of Fan.	Diameter—feet.	Revolutions per minute.	Water gauge at fan—inches.	Number of fans.	Number of splits.	Number of persons employed.	minute at inlet.	Cubic feet of air per minute at face of workings.	Cubic feet of air per minute at outlet.
South shaft No. 1,	Guibal,	25	65	1.5	3	9	511	178,100	136,200	187,100
North shaft No. 1,	Guibal,	22.5	65	1.7	2	9	412	160,700	109,400	183,200
North shaft No. 2,	Guibal,	25	62	1.6	2	6	379	107,600	82,900	118,100
Slope No. 4,	Guibal,	20	90	1.9	3	6	280	168,000	117,300	172,200
Shaft No. 4,	Guibal,	20	40	.4	1	3	21	69,000	51,000	71,000
Shaft No. 5,	Guibal,	8	135	1.1	1	2	36	41,000	31,000	42,000
Shaft No. 6,	Guibal,	20	76	1.1	1	6	304	109,170	89,750	109,570
Slope No. 6,	Guibal,	25	62	1.4	1	4	208	118,000	91,000	119,000
Tunnel No. 6,	Guibal,	20	60	.9	1	3	118	47,500	39,800	47,700
Total Susquehanna Coal Co.,		....	....	....	15	48	2,269	999,070	748,350	1,051,870
Shaft No. 1, Kingston,	Guibal,	26	86	2.5	2	5	188	93,200	77,800	106,700
Shaft No. 2, Kingston,	Guibal,	24	78	1.4	1	7	282	123,000	104,000	129,200
Shaft No. 3, Kingston,	Guibal,	24	78	1.4	1	4	185	55,000	37,800	56,900
Shaft No. 4, Kingston,	Guibal,	25	75	2.5	1	5	304	81,500	59,300	85,600
Gaylord,	Guibal,	24	58	1.1	1	3	103	45,300	27,700	52,600
Total Kingston Coal Co.,		....	....	....	6	24	1,062	398,000	306,600	431,000
Woodward No. 1,	Guibal,	20	46	2.5	1	9	359	228,700	184,800	294,600
Woodward No. 2,	Guibal,	16	116	2.4	1	7	284	113,400	107,500	152,000
Avondale,	D., L. & W.,	16	95	1.5	2	8	220	167,900	155,900	216,000
Espy tunnel,	Guibal,	12	130	2	1	4	50	50,100	42,800	58,200
Bliss, Red Ash,	Guibal,	35	34	1.2	1	4	97	57,600	50,100	60,900
Bliss, Hillman,	Guibal,	35	34	1.2	1	3	12	14,000	10,000	17,000
Bliss, Baltimore,	Guibal,	35	34	1.2	1	4	161	59,100	48,300	67,700
Total Del., Lack. & West. R. R. Co.,		....	....	....	8	39	1,183	690,800	599,400	866,400

Dorrance,	Guibal,	35	50	1.9	2	16	375	311,200	226,500	354,000
Franklin,	Guibal,	15.5	60	.5	4	14	299	216,800	134,700	275,200
Total Lehigh Valley Coal Co.,	....	....	....	....	6	30	674	528,000	361,200	629,200
Parrish,	Guibal,	22	75	2.2	2	7	396	114,000	100,000	118,400
Buttonwood,	Guibal,	20	70	1.7	2	10	653	222,600	202,800	245,800
Total Parrish Coal Co.,	....	....	....	....	4	17	1,049	336,600	302,800	364,200
Dodson,	Guibal,	20	80	1.7	1	4	246	106,800	85,600	108,600
Warrior Run,	Guibal,	20	74	1.25	1	4	260	70,200	50,300	84,000
Red Ash,	Guibal,	17	68	1.2	2	5	221	76,700	68,000	80,700
Chauncey,	Natural,	....	....	....	....	3	31	28,600	7,400	29,400
Hadleigh,	Guibal,	20	70	.2	1	3	83	23,300	21,000	24,200
West End,	Guibal,	17½	75	1.4	4	5	343	121,810	70,470	154,460
Alden,	Guibal,	24	62	1.1	2	13	319	214,100	186,000	242,000
Total for all collieries,	....	....	....	....	91	352	14,338	7,905,320	6,195,900	8,715,220

Explosion at the Buttonwood Colliery.

An explosion of fire damp; causing the death of six men and seriously injuring six others; occurred at about 2 o'clock P. M., October 25, 1901, at the Buttonwood colliery of the Parrish Coal Company. At 1 P. M., as William Morris, who was driving the No. 4 Hillman seam plane extension, was unloading a set of cross-timbers from a car at the face, his laborer ignited some feeders with his naked light, which slightly burned two laborers in the face of the airway which is driven parallel with, and for the purpose of ventilating the plane. Morris and his laborers and August Weiss, the airway miner, thought they had extinguished the burning feeders and went home with the injured men.

When the report of the accident reached the foot of the shaft, the assistant foreman, Ebenezer D. Williams and Gomer Williams, taking with them a number of men, started up the plane, but were assured by Morris and Weiss, whom they met near the foot, that the fire had been extinguished, but that they had better make a thorough examination to satisfy themselves.

When they were near the head of the plane, a second explosion took place, instantly killing Ebenezer D. Williams, assistant foreman; Gomer Williams, assistant foreman; Thomas Guest, pipeman; Thomas Price, tracklayer, and William S. Phillips, company miner, and fatally injuring Daniel Davies, pulleyman, who died on the 27th; also seriously injuring Daniel Davies, mine foreman; Evan Evans, bratticeman; William Frey, tracklayer, and Patrick McHale, doorman.

The ventilation in this part of the mine, under normal conditions is very good, amounting to 30,000 cubic feet of air per minute at the face, but the gangway had met a fault in the coal, which gave off a large increase of gas, so that the feeders could be ignited anywhere from the face of the gangway along the rib for sixty feet down the airway. From the evidence presented at the coroner's inquest, it appeared that when the laborer ignited the feeders at the corner of the cross-heading in the gangway, the flame ran across the face of the gangway in one direction, and in the other, it went through the cross-heading and down along the left rib of the airway, doing but little damage excepting to burn the two laborers and disarrange the ventilation which permitted the accumulation that caused the second explosion. There is no doubt but that there was a small feeder left burning alongside the rib of the airway, and when the gas came in contact with it, the second explosion occurred.

The coroner's jury in its verdict recommended that in mines generating explosive gases, no other light save that of a locked safety lamp should be used; and that flameless powder be used exclusively in blasting.

Improvements by the Susquehanna Coal Company During 1901.

Colliery No. 5.—Shaft No. 2, Nanticoke, completed rock plane from Lee to Ross seams, total length 430 feet—outlet for second opening from head of No. 5 plane to connect with old workings in No. 4 tunnel—airshaft 100 feet deep from surface to head of No. 5 plane.

Shaft No. 4.—Extended rock foot on east side of shaft 125 feet, turned south and drove tunnel 220 feet and struck the coal; drove a tunnel on the north side 600 feet from the foot before reaching the seam, and an outlet for the second opening.

Shaft No. 5.—A plane 350 feet long to the top of the anticlinal on east side of shaft.

Slope No. 4.—Reopened the slope from No. 7 to No. 8 lifts.

Colliery No. 5.—Outside, Babcock & Wilcox boiler plant 500 horse power, and a large addition to the breaker to be used as a jig house.

Colliery No. 6.—Opened up Rider seam in No. 6 tunnel; open cut ten feet deep and 370 feet long for the purpose of getting around to the other pitch at No. 6 slope; No. 6 South shaft, a new traveling way from the head of No. 4 plane to the foot of shafts so that the men need not walk on the motor road. Outside, installed 1,000 horse power Babcock & Wilcox boilers, and large addition to the breaker.

Colliery No. 7.—No. 1 North shaft reopened Cooper seam from No. 17 tunnel, that had been abandoned for several years. No. 1 South shaft, reopened No. 10 slope from top to bottom to take the coal from southeasterly portion up No. 10 slope instead of up No. 5 slope; drove trail slope 500 feet long in Ross seam to develope basin; sunk a bore hole from the surface to the head of No. 10 slope eight inches in diameter for the slope rope. Outside, 500 horse power Babcock & Wilcox boilers; compressor plant to run air motor in No. 1 South shaft, and in the breaker, several Anthracite separators or spiral slate pickers.

In compliance with act No. 212, session of 1901, approved by the Governor the 29th day of May, 1901, this company has at each mine an emergency hospital for the care of injured employes, at least eight feet by twelve feet, and containing the following articles for immediate use: Four woolen blankets, two rubber blankets, eight quarts carron oil, two small rubber tourniquets; one large body rubber tourniquets, one bottle antiseptic lotion, one bottle aromatic spirits of ammonia, one dozen roller bandages, three triangular bandages, one roll adhesive plaster, ten wooden splints, one wash basin, one tin cup, two linen towels, one paper of No. 3 pins, one dozen safety pins No. 2½, one teaspoon, one scissors, two bars surgeon's soap, twelve oz. absorbent lint; twelve oz. absorbent cotton; a sufficient supply is kept at the office to supply the hospitals when necessary: also a record book, two kerosene lamps, two chairs, two benches, two stretchers and a table. The rooms are heated by steam and are very comfortable. Every mine that I have visited since this law went into effect on November 29, 1901, is provided with an emergency hospital in accordance with the law; the supplies and furnishings vary with the different companies, but the above list is a fair average of the materials provided. The majority of the companies have employed physicians to hold schools of instruction at which the foremen, fire-bosses and driver bosses have been taught how to stop the flow of blood, dress burns, set a broken bone, and give what aid they can before the arrival of a physician.

Improvements Made by the Lehigh Valley Coal Company During the Year 1901.

Dorrance Colliery.—A rock plane has been started, to be driven on on angle of eighten degrees, from the Baltimore to the five foot seam; during the year this plane has been driven a distance of 357 feet. The plane is eight feet high and eighteen feet wide. A rock tunnel driven through the measures 372 feet long from the Hillman to the Abbott seam. The volume of gas given off in the West Hillman plane worknigs was so large, that during the first part of the year this portion of the mine was stopped, until the intake airway was enlarged. When this was completed, the quantity of air at the face, was increased from 55,000 cubic feet per minute to 75,000 cubic feet, which has enabled them to resume mining in that seam, although they use locked safety lamps exclusively as a precaution. Outside, two horizontal tubular boilers, six feet in diameter and eighteen feet long were put in, replacing six old cylinder boilers.

Improvements Made by the Alden Coal Company During the Year 1901.

Shaft No. 1.—Tunnel over synclinal from mill to mill seam, 300 feet long seven feet by fourteen feet. Airshaft as a second opening from Forge to Cooper seam 100 feet deep, size eight feet by ten feet. A slope driven on a pitch of twenty degrees from the surface in the Mill seam 297 feet deep, size eight feet by twelve feet.

Shaft No. 2.—Rock airshaft from the Rosy to the Red Ash seam, to be used as a second opening fifty feet deep, seven feet by eight feet. Outside, five Anthracite separators, or spiral slate pickers and a fifty light acetylene gas plant.

Annual Examination of Mine Foremen.

The examination of applicants for certificates of qualification for mine foremen and assistant mine foremen was held in this district on the 4th, 5th and 6th of June, 1901, at the City Hall, Wilkes-Barre.

The board of examiners were, G. M. Williams, Mine Inspector; Edward Mackin, superintendent; Frank Mills and Thomas D. Lloyd, miners. There were twenty-two applicants for mine foreman certificates, and the following named were recommended: John Wasley, Benjamin Davey, John McDonald, George Gallagher, Wm. Morgan, and Joseph Lippincott, of Wilkes-Barre; Robert Rutherford and Thomas Llewellyn, of Plymouth; John E. Thomas and William Morgan, of Glen Lyon; Harry O. Jones, Sugar Notch; E. D. Williams, Nanticoke; Rowland R. Jones, Westmoor; Arthur H. Lewis, Plains; and John Flynn, Chauncey.

The following named persons received certificates of qualification for assistant mine foreman: Theodore H. Richards, Levi P. Gibbon, William P. Thomas, Reese T. Jones, Thomas Williams, William H. Hughes, Louis Lloyd, John W. Davis, Morgan G. Thomas, Richard C. Thomas, George Roberts, David M. Jenkins, Abner Jonathan and James Gallagher, Wilkes-Barre; John T. Jenkins, Daniel Jones Edward B. Griffith, John H. Edwards, David J. Williams, Baldwin Edwards, William W. Morgan and Jacob Watkins, Edwardsdale; Hugh Evans, Daniel W. Reese, Thomas T. Jones, Orel E. Coursen, John H. Davies, Edward Gallagher and Robert Werder, Plymouth; Peter Sarpolis, Thomas Stoker, Daniel Igo, Edwin Jones, James Sullivan and John Blaylock, of Wanamie; David W. Griffith, John D. Evans, John Pratt and Fred. W. Smith, Nanticoke; Edward O'Donnell, Evan H. Evans and Richard Jones, Sugar Notch; Jehoiada Evans and David T. Richards, Ashley; David E. Hughes, Warrior Run; Daniel E. Hoffman, Glen Lyon and Robert F. Hart, Westmoreland.

Mine Fires.

The only mine fire in this district that required a special effort to extinguish occurred at the Franklin colliery of the Lehigh Valley Coal Company. On the 11th of September a fire was discovered in the Baltimore slope, between No. 1 and No. 2 levels, near the bottom of the slope, about 10 P. M. In a very short time, the slope was a mass of flames and smoke, and the fire was fed by a large amount of old timber, used for cogs and collars. A vigorous fight was made, and after two weeks of hard work it was entirely extinguished. No accidents occurred to the men employed in this work. The cause of the fire has not been ascertained.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Fourth Anthracite District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Lehigh and Wilkes-Barre Coal Co.						
Hollenback No. 2,	Luzerne,	William J. Richards,	Wilkes-Barre,	Morgan R. Morgan, inside superintendent; W. F. Herring, outside superintendent; Charles F. Huber, mining engineer.	Wilkes-Barre,	C. R. R. of N. J.
Empire No. 4,	Luzerne,	William J. Richards,	Wilkes-Barre,		Wilkes-Barre,	C. R. R. of N. J.
No. 3 South Wilkes-Barre,	Luzerne,	William J. Richards,	Wilkes-Barre,		Wilkes-Barre,	C. R. R. of N. J.
No. 5 South Wilkes-Barre,	Luzerne,	William J. Richards,	Wilkes-Barre,		Wilkes-Barre,	C. R. R. of N. J.
Stanton No. 7,	Luzerne,	William J. Richards,	Wilkes-Barre,		Wilkes-Barre,	C. R. R. of N. J.
Maxwell No. 20,	Luzerne,	William J. Richards,	Wilkes-Barre,	do. do.	Wilkes-Barre,	C. R. R. of N. J.
No. 9 Sugar Notch,	Luzerne,	William J. Richards,	Wilkes-Barre,	do. do.	Wilkes-Barre,	C. R. R. of N. J.
Lance No. 11,	Luzerne,	William J. Richards,	Wilkes-Barre,	do. do.	Wilkes-Barre,	C. R. R. of N. J.
Nottingham No. 15,	Luzerne,	William J. Richards,	Wilkes-Barre,	do. do.	Wilkes-Barre,	C. R. R. of N. J.
Reynolds No. 16,	Luzerne,	William J. Richards,	Wilkes-Barre,	do. do.	Wilkes-Barre,	C. R. R. of N. J.
Wanamie No. 18,	Luzerne,	William J. Richards,	Wilkes-Barre,	do. do.	Wilkes-Barre,	C. R. R. of N. J.
Wanamie No. 19,	Luzerne,	William J. Richards,	Wilkes-Barre,	do. do.	Wilkes-Barre,	C. R. R. of N. J.
Jersey Annex No. 8,	Luzerne,	William J. Richards,	Wilkes-Barre,	do. do.	Wilkes-Barre,	C. R. R. of N. J.
Del. & Hudson Canal Co.						
Baltimore No. 2,	Luzerne,	C. C. Rose,	Scranton,	E. R. Pettebone, engineer of mines.	Scranton,	Del. & Hudson R. R.
Baltimore slope,	Luzerne,	C. C. Rose,	Scranton,		Scranton,	Del. & Hudson R. R.
Baltimore tunnel,	Luzerne,	C. C. Rose,	Scranton,	Samuel R. Morgan,	Wilkes-Barre,	Del. & Hudson R. R.
Conyngham No. 1,	Luzerne,	C. C. Rose,	Scranton,	Samuel R. Morgan,	Wilkes-Barre,	Del. & Hudson R. R.
Conyngham No. 2,	Luzerne,	C. C. Rose,	Scranton,	Samuel R. Morgan,	Wilkes-Barre,	Del. & Hudson R. R.
Boston,	Luzerne,	C. C. Rose,	Scranton,	Thomas Stoneham,	Plymouth,	Del. & Hudson R. R.
Plymouth Mountain,	Luzerne,	C. C. Rose,	Scranton,	Thomas Stoneham,	Plymouth,	Del. & Hudson R. R.
Plymouth No. 1,	Luzerne,	C. C. Rose,	Scranton,	Thomas Stoneham,	Plymouth,	Del. & Hudson R. R.
Plymouth No. 2,	Luzerne,	C. C. Rose,	Scranton,	Thomas Stoneham,	Plymouth,	Del. & Hudson R. R.
Plymouth No. 3,	Luzerne,	C. C. Rose,	Scranton,	Thomas Stoneham,	Plymouth,	Del. & Hudson R. R.
Plymiuth No. 4,	Luzerne,	C. C. Rose,	Scranton,	Thomas Stoneham,	Plymouth,	Del. & Hudson R. R.
Plymouth No. 5,	Luzerne,	C. C. Rose,	Scranton,	Thomas Stoneham,	Plymouth,	Del. & Hudson R. R.
Susquehanna Coal Co.						
Shaft No. 1, George seam,	Luzerne,	Morris Williams,	Wilkes-Barre,	F. H. Kohlbraker, superintendent; John T. Thomas, assistant superintendent.	Nanticoke,	Penn'a Railroad.
Shaft No. 1, Forge seam,	Luzerne,	Morris Williams,	Wilkes-Barre,		Nanticoke,	Penn'a Railroad.
Shaft No. 1, Lee seam,	Luzerne,	Morris Williams,	Wilkes-Barre,		Nanticoke,	Penn'a Railroad.
Shaft No. 2,	Luzerne,	Morris Williams,	Wilkes-Barre,	do. do.	Nanticoke,	Penn'a Railroad.
Shaft No. 4,	Luzerne,	Morris Williams,	Wilkes-Barre,	do. do.	Nanticoke,	Penn'a Railroad.
Shaft No. 5,	Luzerne,	Morris Williams,	Wilkes-Barre,	do. do.	Nanticoke,	Penn'a Railroad.
Shaft No. 6,	Luzerne,	Morris Williams,	Wilkes-Barre,	do. do.	Nanticoke,	Penn'a Railroad.
Slope No. 4,	Luzerne,	Morris Williams,	Wilkes-Barre,	do. do.	Nanticoke,	Penn'a Railroad.
Slope No. 6,	Luzerne,	Morris Williams,	Wilkes-Barre,	do. do.	Nanticoke,	Penn'a Railroad.
Tunnel No. 6,	Luzerne,	Morris Williams,	Wilkes-Barre,	do. do.	Nanticoke,	Penn'a Railroad.

Kingston Coal Co.						
Shaft No. 1,	Luzerne,	G. M. Williams,	Kingston,	Morgan Rosser,	Kingston,	D., L. & W. R. R.
Shaft No. 2,	Luzerne,	G. M. Williams,	Kingston,	Gwilym Edwards,	Edwardsville,	D., L. & W. R. R.
Shaft No. 3,	Luzerne,	G. M. Williams,	Kingston,	Gwilym Edwards,	Edwardsville,	D., L. & W. R. R.
Shaft No. 4,	Luzerne,	G. M. Williams,	Kingston,	Morgan D. Rosser,	Kingston,	D., L. & W. R. R.
Gaylord slope,	Luzerne,	G. M. Williams,	Kingston,	Gwilym Edwards,	Edwardsville,	D., L. & W. R. R.
D., L. & W. R. R. Co.						
East Woodward No. 1,	Luzerne,	E. E. Loomis,	Scranton,	Montrose Barnard,	Wilkes-Barre,	D., L. & W. R. R.
West Woodward No. 1,	Luzerne,	E. E. Loomis,	Scranton,	Montrose Barnard,	Wilkes-Barre,	D., L. & W. R. R.
Woodward No. 2,	Luzerne,	E. E. Loomis,	Scranton,	Montrose Barnard,	Wilkes-Barre,	D., L. & W. R. R.
Avondale,	Luzerne,	E. E. Loomis,	Scranton,	Montrose Barnard,	Wilkes-Barre,	D., L. & W. R. R.
Bliss,	Luzerne,	E. E. Loomis,	Scranton,	Montrose Barnard,	Wilkes-Barre,	D., L. & W. R. R.
Espy tunnel,	Luzerne,	E. E. Loomis,	Scranton,	Montrose Barnard,	Wilkes-Barre,	D., L. & W. R. R.
Auchincloss Nos. 1 and 2,	Luzerne,	E. E. Loomis,	Scranton,	Montrose Barnard,	Wilkes-Barre,	D., L. & W. R. R.
Lehigh Valley Coal Co.						
Dorrance,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley R. R.
Franklin,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	Eli T. Conner,	Wilkes-Barre,	Lehigh Valley R. R.
Red Ash Coal Co.						
Red Ash No. 1,	Luzerne,	Morgan B. Williams,	Wilkes-Barre,	Edward Smith,	Wilkes-Barre,	C. R. R. of N. J.
Red Ash No. 2,	Luzerne,	Morgan B. Williams,	Wilkes-Barre,	Edward Smith,	Wilkes-Barre,	C. R. R. of N. J.
Parrish Coal Co.						
Parrish,	Luzerne,	H. H. Ashley,	Plymouth,	Thomas R. Evans,	Plymouth,	C. R. R. of N. J.
Buttonwood,	Luzerne,	H. H. Ashley,	Plymouth,	Thomas R. Evans,	Plymouth,	C. R. R. of N. J.
Alden Coal Co.						
Alden,	Luzerne,	K. M. Smith,	Alden Station,	James M. Turner,	Alden Station,	C. R. R. of N. J.
West End Coal Co.						
West End,	Luzerne,	J. N. Rice,	Scranton,	David R. Roberts,	Shickshinny,	Penn'a Railroad.
Warrior Run Coal Co.						
Warrior Run,	Luzerne,	James B. Davies,	Wilkes-Barre,			Lehigh Valley R. R.
Crescent Coal Mining Co.						
Hadleigh,	Luzerne,	Michael Grimes,	Scranton,	Michael Grimes,	Scranton,	C. R. R. of N. J.
Plymouth Coal Co.						
Dodson,	Luzerne,	James B. Davies,	Plymouth,			D., L. & W. R. R.
George F. Lee Coal Co.						
Chauncey,	Luzerne,	George F. Lee,	Wilkes-Barre,	M. H. Corgan,	Nanticoke,	D., L. & W. R. R.
Sterling washery,	Luzerne,	James Butler,	Moosic,			D., L. & W. R. R.

TABLE II—Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Fourth Anthracite District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at collieries.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number of kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Lehigh and Wilkes-Barre Coal Co.												
Hollenback No. 2,	Luzerne,	198,038.14	10,270	30,449.00	238,757.14	187.4½	523	1	9	6,643	15,325	79
Empire No. 4,	Luzerne,	......	......	......	......	......	44	......	1	75	6,600	1
South Wilkes-Barre No. 5,	Luzerne,	390,968.08	25,664	60,010.05	476,642.13	212	859	......	33	8,429	66,700	90
Stanton No. 7,	Luzerne,	202,634.08	13,690	6,871.00	223,195.08	145.4	659	4	9	6,528	5,455	93
Sugar Notch No. 9,	Luzerne,	188,635.10	10,270	2,059.00	200,964.10	178.9	557	4	12	6,043	5,412	68
Lance No. 11,	Luzerne,	312,181.17	22,250	2,542.15	336,974.12	218.6½	684	4	11	8,869	44,118	75
Nottingham No. 15,	Luzerne,	553,015.13	34,224	7,174.09	594,414.02	217.9½	999	3	19	11,285	9,385	130
Reynolds No. 16,	Luzerne,	202,637.15	13,690	78.00	216,405.15	210.9	402	......	6	5,353	606	63
Wanamie No. 18,	Luzerne,	304,382.04	17,112	2,222.00	323,716.04	195.2	692	3	13	9,222	12,600	83
Maxwell No. 20,	Luzerne,	329,719.06	23,953	7,742.00	361,414.06	198.6	734	2	17	8,338	40,594	75
Jersey Annex No. 8,	Luzerne,	81,835.05	......	......	81,835.05	179½	32	......	1	......	......	......
Dirt banks,	Luzerne,	......	......	16.00	16.00	......	......	......	......	......	......	......
Total,	......	2,764,049.00	171,123	119,164.09	3,054,336.09	194.4	6,185	21	131	70,785	206,795	757
Delaware and Hudson Canal Co.												
Baltimore shaft No. 2,	Luzerne,	130,310.06	23,277	1,866.00	155,453.06	83.1	361	1	4	2,043	287.2	......
Baltimore tunnel,	Luzerne,	......	......	......	......	169.1	237	......	......	3,904	3,570	38
Baltimore slope,	Luzerne,	143,541.12	20,957	2,904.00	167,402.12	178.3	420	......	1	4,629	412.2	66
Conyngham Nos. 1 and 2,	Luzerne,	166,954.14	24,554	3,662.10	195,171.04	175.1	496	1	5	4,974	3,570	33
Plymouth Mountain,	Luzerne,	......	......	......	......	174.1	65	......	......	1,056	25	7
Boston,	Luzerne,	191,902.10	12,750	......	204,652.10	174.1	401	1	3	4,701	837.2	54
No. 2 Plymouth,	Luzerne,	155,890.12	26,234	......	182,124.12	153.2	568	2	6	6,790	2,150	74
No. 3 Plymouth,	Luzerne,	175,988.18	15,884	2,866.00	194,738.18	165	544	......	2	6,532	340	83
No. 4 Plymouth,	Luzerne,	......	......	......	......	192.1	345	......	2	4,997	746	50
No. 5 Plymouth,	Luzerne,	314,304.13	29,450	4,617.15	348,372.08	192.1	397	1	4	4,661	805	51
Total,	......	1,278,893.05	153,106	15,916.05	1,447,915.10	173.9	3,834	6	27	44,287	12,743.2	456

Susquehanna Coal Co.												
Shaft No. 2, colliery No. 5,	Luzerne,	....	....	....	....	....	....	3	22	....	....	..
Slope No. 4, colliery No. 5,	Luzerne,	311,422.02	53,308.05	15,395.04	380,125.11	228.2	1,319	......	2	9,982	50,724	139
Shaft No. 4, colliery No. 5,	Luzerne,	....	....	....	....	....	....	......	1	....	....	......
Shaft No. 5, colliery No. 5,	Luzerne,	....	....	....	....	....	....	......	2	....	....	......
North shaft No. 1, colliery No. 7, South shaft No. 1, colliery No. 7,	Luzerne,	445,185.08	52,727	2,085.16	499,998.54	222.3½	1,465	4	23	9,554	40,526	195
Shaft No. 6, colliery No. 6,	Luzerne,	....	....	....	....	....	....	......	9	....	....	......
Slope No. 6, colliery No. 6,	Luzerne,	381,501.05	43,629	3,968	429,098.05	229.1½	1,280	1	6	12,935	1,450	116
Tunnel No. 6, colliery No. 6,	Luzerne,	....	....	....	....	....	....	2	7	....	....	......
Total,	....	1,138,108.15	149,664.05	21,419	1,309,222	226.6	4,064	10	72	32,471	92,700	450
Kingston Coal Co.												
Shafts No. 2 and 3, colliery No. 2,	Luzerne,	422,422	10,600	15,823	448,845	221	1,015	3	4	14,110	2,075	132
Shafts No. 1 and 4, colliery No. 4,	Luzerne,	393,094	7,000	....	400,094	212	1,014	5	10	11,995	4,050	110
Gaylord,	Luzerne,	101,141	2,000	2,465	105,606	150	268	1	1	3,692	150	33
Total,	....	916,657	19,600	18,288	954,545	194.3	2,297	9	15	29,797	6,275	275
Delaware, Lack'a and Western R. R. Co.												
Avondale,	Luzerne,	181,069.11	30,720	1,782.10	213,572.01	218.1	528	......	13	4,131	2,175	66
Woodward shafts No. 1 and 2,	Luzerne,	387,616.10	31,608	6,065.15	425,290.05	190.1	1,126	3	11	10,850	7,182	100
Bliss and Espy tunnel,	Luzerne,	323,407.09	25,908	4,568.16	353,884.05	187.7	742	2	3	9,366	12,539	58
Auchincloss No. 1 and 2,	Luzerne,	....	1,552	....	1,552	....	87	......	......	....	850	7
Total,	....	892,093.10	89,788	12,417.01	994,298.11	198.6	2,483	5	30	24,347	22,746	231
Lehigh Valley Coal Co.												
Dorrance,	Luzerne,	212,330.16	11,472	56,441.02	280,243.18	191.8	558	3	4	6,626	33,610	84
Franklin,	Luzerne,	152,540.08	23,007	5,247.10	180,794.18	158.3½	470	2	2	4,869	5,775	78
Total,	....	364,871.04	34,479	61,688.12	461,038.16	175.1	1,028	5	6	11,495	39,385	162
Red Ash Coal Co.												
Red Ash No. 1,*	Luzerne,	....	5,070	....	....	221.75	203	1	5	2,815	1,900	20
Red Ash No. 2,	Luzerne,	238,465.03	4,506	2,543.10	250,584.13	221.75	354	2	2	3,817	850	36
Total,	....	238,465.03	9,576	2,543.10	250,584.13	221.75	557	3	7	6,632	2,750	56
Parrish Coal Co.												
Parrish,	Luzerne,	245,376.06	19,220	12,101	276,697.06	216	632	3	3	8,721	35,700	91
Buttonwood,	Luzerne,	367,881.02	28,840	8,474	405,195.02	212	887	7	10	11,977	21,500	99
Total,	....	613,257.08	48,060	20,575	681,892.08	214	1,519	10	13	20,698	57,200	193
Alden Coal Co.												
Shafts No. 1 and 2,	Luzerne,	235,298.05	25,000	5,294.12	265,592.17	200.25	615	4	2	6,687	11,600	82
West End Coal Co.												
West End,	Luzerne,	73,290.02	18,500	7,846	99,636.02	150	489	2	1	2,670	30,000	53
Lee,†	Luzerne,	....	....	....	....	....	....	......	3	....	....	......

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number of kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Warrior Run Coal Co.												
Warrior Run,	Luzerne,	156,289 67	17,600	1,878	175,667 67	156 2	432	1	5	8,573	200	27
Crescent Coal Mining Co.												
Hadleigh,	Luzerne,	....	600	....	600	6 1	210	......	......	73	60	22
Plymouth Coal Co.												
Dodson,	Luzerne,	117,168 14	20,000	1,726.10	138,835.04	174 1	420	1	5	2,785	600	30
George F. Lee.												
Chauncey,	Luzerne,	13,326 13	1,080	265.15	14,662 08	64 7	150	1	1	120	80	12
Sterling washery,	Luzerne,	38,955 60	3,650	....	42,605 60	174	22	......	......	....	....	......
Grand total,	....	8,840,663.06	761,626.05	289,042.14	9,891,332.05	191.07	24,317	78	322	256,326	483,024 2	2,806

Recapitulation.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number of kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Lehigh and Wilkes Barre Coal Co.,	Luzerne,	2,764,049 66	171,123	119,161 09	3,054,336 09	194 4	6,185	21	131	70,785	206,755	757
Delaware and Hudson Canal Co.,	Luzerne,	1,278,893.05	153,106	15,916.05	1,447,915.10	173 5	3,831	6	27	44,287	12,743 2	456
Susquehanna Coal Co.,	Luzerne,	1,138,108 15	149,664 05	21,449	1,309,222.06	226.6	4,061	10	72	32,471	92,700	450
Kingston Coal Co.,	Luzerne,	916,657 00	19,600	18,288	954,545 00	194 3	2,300	9	15	23,797	6,216	275
Delaware, Lackawanna & Western R. R. Co.,	Luzerne,	892,053 10	89,788	12,417.01	594,258.11	158 6	2,483	5	30	24,917	22,746	231
Lehigh Valley Coal Co.,	Luzerne,	364,871.04	34,479	61,688 12	461,038.16	175.1	1,628	5	6	11,495	39,885	162
Red Ash Coal Co.,	Luzerne,	238,465.03	9,576	2,543 10	250,584.13	221 75	557	3	7	6,632	2,760	56
Parrish Coal Co.,	Luzerne,	613,257 08	48,000	20,575.00	681,832 08	214	1,619	10	13	20,698	57,200	193
Miscellaneous coal companies,	Luzerne,	631,268 01	86,230	17,000 17	737,498 18	151.5	2,947	9	21	15,814	42,430	226
Total,	....	8,840,663.06	761,626.05	289,012.14	9,891,322.05	191.67	24,317	78	322	256,826	483,621.2	2,806

*Coal taken to No. 2 breaker.

†Included in West End.

TABLE II—Continued.

Names of Operators and Collieries.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Lehigh and Wilkes-Barre Coal Co.,	Luzerne,	184	8,117	63	9,204	17,321	10	1	....	305	26,724	26	18,940	8,251	......	7
Delaware and Hudson Canal Co.,	Luzerne,	160	4,800	15	3,150	7,950	3	....	....	178	22,285	15	15,100	6,110	......	1
Susquehanna Coal Co.,	Luzerne,	71	2,555	56	7,964	10,519	14	3	....	63	12,000	12	12,500	6,500	......	9
Kingston Coal Co.,	Luzerne,	135	3,395	15	1,950	5,345	3	....	3	39	4,055	8	3,600	1,250	1	2
Delaware, Lackawanna and West. R. R. Co.,	Luzerne,	18	540	12	6,570	7,110	4	....	5	68	8,577	9	9,416	8,186	6	3
Lehigh Valley Coal Co.,	Luzerne,	12	360	11	1,950	2,310	3	....	....	27	2,300	3	3,100	1,910	......	2
Red Ash Coal Co.,	Luzerne,	14	765	....		765	2	....	....	9	1,011	3	920	990	......	....
Parrish Coal Co.,	Luzerne,	18	600	11	1,650	2,250	....	....	....	21	4,100	2	1,800	1,500	......	2
Miscellaneous coal companies,	Luzerne,	35	1,085	39	4,730	5,815	....	....	....	59	5,085	11	10,500	6,145	......	4
Total,	....	644	22,217	215	37,168	59,385	39	1	8	769	86,137	92	75,876	40,842	7	30

TABLE III—Showing the number of each class of employes at each colliery in the Fourth Anthracite District during the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Lehigh and Wilkes-Barre Coal Co.																	
Hollenback No. 2,	Luzerne,	2	6	175	45	48	24	49	349	1	4	19	86	2	62	174	523
Empire No. 4,	Luzerne,	1	1	....	....	2	....	24	28	......	......	7	....	....	9	16	44
South Wilkes-Barre No. 3 and 5,	Luzerne,	3	8	201	212	49	62	124	659	1	7	24	104	3	61	200	859
Stanton No. 7,	Luzerne,	1	6	170	104	57	54	79	471	1	5	20	79	3	80	188	659
Maxwell No. 20,	Luzerne,	2	5	177	150	27	59	106	526	1	6	26	97	3	75	208	734
Sugar Notch No. 9,	Luzerne,	1	4	160	95	38	28	76	402	1	5	13	80	2	54	155	557
Lance No. 11,	Luzerne,	2	5	190	160	58	34	84	533	1	5	23	75	2	45	151	684
Nottingham No. 15,	Luzerne,	1	10	300	216	71	15	131	744	1	7	26	148	3	70	255	999
Reynolds No. 16,	Luzerne,	1	3	85	82	44	17	58	290	1	4	13	51	2	41	112	402
Wanamie No. 18 and 19,	Luzerne,	1	6	181	202	40	18	65	513	1	7	21	65	2	83	179	692
Jersey Annex No. 8,	Luzerne,	......	......	....	....	....	....	....	....	1	1	4	3	....	23	32	32
Total,	....	15	54	1,639	1,266	434	311	796	4,515	10	51	196	788	22	603	1,670	6,185
Delaware and Hudson Canal Co.																	
Baltimore shaft No. 2,	Luzerne,	1	4	53	53	20	1	40	172	1	6	13	116	1	52	189	361
Baltimore tunnel,	Luzerne,	1	3	58	60	28	8	49	207	......	4	12	....	....	14	30	237
Baltimore slope,	Luzerne,	3	3	88	59	41	22	44	260	2	6	17	89	1	45	160	420
Conyngham Nos. 1 and 2,	Luzerne,	1	5	100	124	27	28	72	357	1	7	19	68	2	42	139	496
Boston,	Luzerne,	1	2	81	85	31	8	50	258	1	6	9	78	2	47	143	401
Plymouth Mountain,	Luzerne,	1	......	20	20	6	2	4	53	......	......	4	....	....	8	12	65
Plymouth No. 2,	Luzerne,	1	3	129	129	50	21	75	408	1	5	15	80	2	57	160	568
Plymouth No. 3,	Luzerne,	1	2	123	137	58	19	56	396	1	6	20	73	2	46	148	544
Plymouth No. 4,	Luzerne,	1	1	100	130	37	9	41	319	1	3	9	....	....	13	26	345
Plymouth No. 5,	Luzerne,	1	2	70	70	30	7	42	222	1	8	12	95	2	57	175	397
Total,	....	12	25	822	867	328	125	473	2,652	9	51	130	599	12	381	1,182	3,834

Susquehanna Coal Co.																	
Colliery No. 5, shaft No. 4, Colliery No. 5, shaft No. 5, Colliery No .5, shaft No. 2, Colliery No. 5, slope No. 4,	Luzerne,	3	10	262	344	77	42	165	902	1	28	45	140	4	199	417	1,319
Colliery No. 7, shaft No. 1,	Luzerne,	2	12	306	380	103	58	186	1,047	1	30	31	153	4	199	418	1,465
Colliery No. 6, shaft No. 6, Colliery No. 6, slope No. 6, Colliery No. 6, tunnel No. 6,	Luzerne,	3	8	310	320	104	5	151	901	1	28	25	145	4	176	379	1,280
Total,		8	30	878	1,044	284	105	501	2,850	3	86	101	438	12	574	1,214	4,064
Kingston Coal Co.																	
Colliery No. 4, shaft No. 1,	Luzerne,	1	3	142	84	44	18	42	331	......	......	......	......	......	......	......	......
Colliery No. 4, shaft No. 4,	Luzerne,	1	3	143	57	42	13	46	305	1	20	21	202	2	129	375	1,014
Colliery No. 2, shaft No. 2,	Luzerne,	2	......	141	92	57	23	41	356	......	......	......	......	......	......	......	......
Colliery No. 2, shaft No. 3,	Luzerne,	1	2	134	80	38	32	30	317	2	18	17	180	2	126	345	1,018
Gaylord,	Luzerne,	1	......	52	30	28	5	25	141	1	3	6	62	1	54	127	268
Total,		6	8	612	343	209	91	184	1,453	4	41	44	444	5	309	847	2,300
Del., Lack'a and West. R. R. Co.																	
Woodward Nos. 1 and 2,	Luzerne,	2	7	278	250	90	43	194	844	1	5	21	137	3	115	282	1,126
Avondale,	Luzerne,	1	3	110	109	42	14	145	424	1	5	9	43	2	44	104	528
Auchincloss,	Luzerne,	1	......	4	......	......	......	47	52	1	2	7	......	1	24	35	87
Bliss,	Luzerne,	2	4	193	170	53	13	48	483	1	7	13	144	2	92	259	742
Total,		6	14	565	529	185	70	434	1,803	4	19	50	324	8	275	680	2.483
Lehigh Valley Coal Co.																	
Dorrance,	Luzerne,	2	5	111	91	60	24	87	380	1	12	21	61	5	78	178	558
Franklin,	Luzerne,	2	2	113	79	41	16	75	328	1	13	10	24	3	91	142	470
Total,		1	7	224	170	101	40	162	708	2	25	31	85	8	169	320	1,028
Red Ash Coal Co.																	
Red Ash No. 1,	Luzerne,	1	......	47	53	26	6	29	162	......	1	5	......	1	34	41	203
Red Ash No. 2,	Luzerne,	1	......	70	69	21	7	25	193	1	7	5	87	2	59	161	354
Total,		2	......	117	122	47	13	54	355	1	8	10	87	3	93	202	557
Parrish Coal Co.																	
Parrish,	Luzerne,	1	5	157	113	58	33	75	442	1	6	21	80	5	77	190	632
Buttonwood,	Luzerne,	1	7	207	200	76	50	130	671	1	8	13	102	5	87	216	887
Total,		2	12	364	313	134	83	205	1,113	2	14	34	182	10	164	406	1,519
Alden Coal Co.																	
Alden shafts, Nos. 1 and 2,	Luzerne,	2	5	162	141	45	26	41	422	1	9	19	79	7	78	193	615
West End Coal Co.																	
West End,	Luzerne,	2	1	81	86	30	4	37	241	1	41	18	61	4	123	248	489

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Warrior Run Coal Co. Warrior Run, ...	Luzerne,.......	1	3	108	100	18	20	44	294	1	5	12	54	4	62	138	432
Crescent Coal Mining Co. Hadleigh, ...	Luzerne,.......	1	1	60	30	8	6	27	133	1	4	7	31	2	32	77	210
Plymouth Coal Co. Dodson, ...	Luzerne,.......	1	3	80	95	34	15	60	288	1	7	13	66	4	50	141	429
George F. Lee. Chauncey, ...	Luzerne,.......	1	1	18	20	12	....	15	67	1	3	4	50	1	24	83	150
Sterling washery, ...	Luzerne,.......	......	......	....	....	....	....	....	....	1	......	2	....	4	15	22	22

Recapitulation.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Insile.								Occupations of Persons Employed Outside.							Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Lehigh and Wilkes-Barre,	Luzerne,	15	54	1,639	1,266	434	311	796	4,515	10	51	196	788	22	603	1,670	6,185
Delaware and Hudson Canal Co.,	Luzerne,	12	25	822	867	328	125	473	2,652	9	51	130	599	12	381	1,182	3,834
Susquehanna Coal Co.,	Luzerne,	8	30	878	1,044	284	105	501	2,850	3	86	101	438	12	574	1,214	4,064
Kingston Coal Co.,	Luzerne,	6	8	612	343	209	91	184	1,453	4	41	44	444	5	309	847	2,300
Del., Lack'a and West. R. R. Co.,	Luzerne,	6	14	565	529	185	70	434	1,803	4	19	50	324	8	275	680	2,483
Lehigh Valley Coal Co.,	Luzerne,	2	7	224	170	101	40	162	708	2	25	31	85	8	169	320	1,028
Red Ash Coal Co.,	Luzerne,	2	......	117	122	47	13	51	355	1	8	10	87	3	93	202	557
Parrish Coal Co.,	Luzerne,	2	12	364	313	134	83	205	1,113	2	14	34	182	10	164	406	1,519
Miscellaneous coal companies,	Luzerne,	8	14	509	472	147	71	224	1,445	6	69	73	341	22	369	880	2,325
Washeries,	Luzerne,	......	.....	....	....	....	....	....	....	1	......	2	....	4	15	22	22
Total and average,	....	63	164	5,730	5,126	1,869	909	3,033	16,894	43	364	671	3,288	106	2,952	7,423	24,317

TABLE III—Continued.

Names of Operotors and Collieries.	County.	Number of Days Worked Each Month in Breaker.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Lehigh and Wilkes-Barre,	Luzerne,	19.8	16.1	19.1	13.8	11.3	16.7	12	17.9	16.6	19.8	18.3	13	194.4
Delaware and Hudson Canal Co.,	Luzerne,	17.9	15.8	18.3	10.8	10.9	12.6	11.1	17.2	15	15.2	15.9	14.4	173.9
Susquehanna Coal Co.,	Luzerne,	22.2	18.1	18.95	19.35	18.85	17.2	18.75	18.35	16.25	20.9	18.7	18.6	226.4
Kingston Coal Co.,	Luzerne,	19.4	17.7	17.3	17.6	17.7	18.8	14.3	14.2	11.7	15.1	15.8	15.1	194.6
Delaware, Lackawanna and Western R. R. Co.,	Luzerne,	20.4	17.6	19.2	11	17	16.3	11.9	14.2	16.8	19.2	18.7	15.8	198.2
Lehigh Valley Coal Co.,	Luzerne,	19.0	15.25	16.5	9.75	12.2	17.3	9	15.4	11.6	17.6	16.5	14.9	175.1
Red Ash Coal Co.,	Luzerne,	22.85	17.15	19.15	17.45	15.9	21.6	14.05	22.15	18.30	21.2	18.3	13.65	221.75
Parrish Coal Co.,	Luzerne,	20.4	17.4	21.5	14.9	19.8	20.1	13.2	18.8	16.2	18.6	18.4	15.8	214.1
Miscellaneous coal companies,	Luzerne,	15.47	14.02	14.09	12.67	14.61	17.42	14.88	13.46	14.85	18.54	15.20	12.03	177.24
Washeries,	Luzerne,	24	10	21	20	18	13	19	16	12	4	9	8	174
Total and average,		19.1	16.25	17.25	14.14	15.4	17.15	14	15.85	14.91	17.36	16.16	13.5	191.07

TABLE IV—List of fatal accidents that occurred in and about the mines of the Fourth Anthracite District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	3	John Redusky, ...	Austrian, ..	Miner, ...	31	M.	1	3	No. 2, D. & H., Plymouth.	Luzerne..	Killed by an explosion of gas in old workings.
	5	Michael Felan, ...	Slav, ...	Laborer, ...	25	S.	....	....	Woodward, ...	Luzerne,.	A piece of roof fell upon him. He died the following day.
	9	William Senior, ...	American, ..	Laborer,.........	40	M.	1	2	West End, ...	Luzerne,.	A piece of rock fell from the gob upon him. He died next day.
	17	James Sliker, ...	American, .	Slate picker,...	14	S.	....	....	Maxwell breaker, ...	Luzerne,.	Slid down a schute and passed through a pair of rolls.
	30	John Hagerline, ...	American, .	Laborer, ...	20	S.	....	....	Shaft No. 2, Nanticoke,.	Luzerne,.	Killed by a fall of top rock as he was loading a car at the face of chamber.
	31	John Volitus, ...	Pole, ...	Miner, ...	37	M.	1	....	Shaft No. 4, Kingston,..	Luzerne,.	A bench of rider coal fell on him. He died the same day at the hospital.
Feb.	1	Frank Rancheski,...	Lithuanian,	Miner, ...	35	M.	1	4	Shaft No. 4, Kingston,..	Luzerne,.	Killed by a fall of top coal as he was sounding the roof after firing a shot.
	4	John Ford, ...	English, ...	Miner, ...	45	M.	1	3	Shaft No. 2, Kingston,..	Luzerne,.	Instantly killed by a fall of rock as he was drilling a hole in the face of his chamber.
	13	Joseph Perfesky, ...	Pole, ...	Miner, ...	38	M.	1	6	Shaft No. 2, Kingston,..	Luzerne,.	Instantly killed by a premature blast.
	15	Thomas Ponko, ...	American, .	Door boy, ...	15	S.	....	....	Slope No. 6, Glen Lyon,	Luzerne,.	Run over and killed by a trip of loaded cars.
	19	William Newland,...	English, ...	Miner, ...	37	M.	1	3	Alden No. 1 shaft, ...	Luzerne,.	Killed by a fall of top coal, as he was barring it down, in robbing pillars in the Ross seam.
March	2	John Harrish, ...	Pole, ...	Miner, ...	35	M.	1	2	Chauncey, ...	Luzerne,.	Killed by a fall of roof rock crushing the gangway timbers down upon him.
	5	Thomas J. Thomas,..	Welsh, ...	Brattice man,..	64	M.	1	1	No. 6 tunnel, Glen Lyon,	Luzerne,.	Was putting up a set of timbers on a run when a trip of cars came down and struck a timber. The collar struck him and he was instantly killed.
	5	D. L. Bonewitz, ...	American, .	Engineer, ...	32	M.	1	1	Bliss, ...	Luzerne,.	In passing the compressor the end gave way and he was blown against the side of the engine house; died the same night.

TABLE IV—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
	5	Frank Gasdinski,	Lithuanian,	Miner,	24	S.	....	....	Stanton,	Luzerne,	Fatally burned by an explosion of gas. Died March 7, at the City Hospital.
	12	John Battle,	Irish,	Laborer,	61	M.	1	....	Warrior Run,	Luzerne,	Run over by a trip of cars at the head of slope.
	15	John Simmers,	American,	Door boy,	14	S.	....	....	Alden No. 1,	Luzerne,	Fell from the cage and was instantly killed.
	16	Frank Prill,	Pole,	Laborer,	64	M.	1	3	No. 7 breaker, Nanticoke.	Luzerne,	Stepped before a loaded car coming from No. 1 shaft and was run over; died in a few hours.
	26	John Metslavitch,	Pole,	Miner,	36	M	1	4	Wanamie No. 18,	Luzerne,	Was burned by igniting a body of gas in an old breast. Died April 6th.
April	9	Stanley Frank,	Pole,	Miner,	28	M.	1	1	Wanamie No. 19,	Luzerne,	Severely ubrned by igniting a body of gas in an old breast. Died the next day.
	22	John Kelmel,	Lithuanian,	Laborer,	24	S.	....	....	Dodson,	Luzerne,	Struck by a trip of runaway cars on the rock slope.
May	4	Alexander Mallick,	Pole,	Miner,	36	M.	1	4	No. 2 shaft, Susquehanna Coal Co.	Luzerne,	Instantly killed by a fall of rock in the face of his chamber.
	8	Kiatc Gorski,	Pole,	Laborer,	24	S.	....	....	Sugar Notch No. 9,	Luzerne,	Skull fractured. His head struck the top of a door frame as he was riding out on top of a car. Died May 18th.
	8	Jacob Gromatski,	Lithuanian,	Miner,	31	M.	1	1	Lance No. 11,	Luzerne,	Stepped on a board and a nail pierced his foot. Lock jaw set in and he died on May 11th.
	10	Daniel Kennedy,	Irish,	Miner,	50	M.	1	5	Baltimore No. 2, D. & H.	Luzerne,	Instantly killed by a blast exploding as he was lighting the match.
	27	Thomas Freegard,	English,	Miner,	63	M.	1	5	Nottingham,	Luzerne,	Instantly killed by a fall of top coal at the face of his chamber.
	27	Phillip Sheridan,	Irish,	Driver,	35	M.	1	....	No. 4 shaft, Kingston Coal Co.	Luzerne,	Burned by an explosion of gas; died June 4th.
June	13	Peter Morcavitch,	Lithuanian,	Miner,	28	M.	1	1	No. 1 shaft, Kingston Coal Co.	Luzerne,	Both were instantly killed by a fall of rock at the face of their chamber as they were replacing a set of timber.
	13	Martin Midin,	Lithuanian,	Laborer,	25	S.	....	....			
	20	Thomas S. Jones,	American,	Miner,	27	M.	1	....	Nottingham,	Luzerne,	Instantly killed by a fall of coal that he was undermining.

July	9	Stanley Goodess,	Pole,	Laborer,	27	S.	....	....	Stanton,	Luzerne,	Burned by an explosion of gas; died in the city hospital the same night.
	16	J. H. Ellis,	Welsh,	Timber man,	40	M.	1	5	Woodward,	Luzerne,	Instantly killed by a fall of rider coal as he was setting timbers on the gangway.
	26	W. J. Lyons,	American,	Miner,	53	S.	....	....	No. 2 shaft, Alden,	Luzerne,	Killed by a fall of coal and clod as he was loading a car at the face of his chamber.
	26	Ralph Turner,	American,	Miner,	33	M.	1	2	No. 2 shaft, Alden,	Luzerne,	Killed by a fall of top coal as he was drilling a hole in the mining bench.
Aug.	3	Simon Patrick,	Pole,	Miner,	45	M.	1	1	Dorrance,	Luzerne,	Back was broken by a fall of coal in the face of his chamber.
	5	Joseph Zevarski,	Pole,	Miner,	30	S.	....	....	Dorrance,	Luzerne,	Killed by a trip of cars striking him as he was walking up the slope.
	6	Frank Lushuski,	Pole,	Miner,	33	M.	1	1	Parrish,	Luzerne,	Killed by a fall of rock as he was standing a prop in the face of his chamber.
	7	Michael Gurski,	German,	Miner,	29	M.	1	1	Bliss,	Luzerne,	Killed by a fall of top coal as he was loading a car in the face of his chamber.
	10	Frank Strong,	American,	Runner,	27	M.	1	1	West End Coal Co.,	Luzerne,	Instantly killed by a fall of loose gob on the slope.
	14	Zachariah Henson,	English,	Laborer,	43	M.	1	2	No. 1 shaft No. 7, Nanticoke.	Luzerne,	Instantly killed by a fall of top rock on the gangway road.
	16	John Volcavage,	Pole,	Miner,	45	M.	1	8	Lance No. 11,	Luzerne,	Burned by an explosion of gas in his chamber. Died Aug. 23d.
	19	Augustus Thomas,	American,	Miner,	47	M.	1	6	Wanamie No. 18,	Luzerne,	Killed by a fall of roof rock as he was barring it down.
	22	Joseph L. Duggan,	American,	Driver,	17	S.	....	....	No. 1 S. shaft No. 7, Nanticoke.	Luzerne,	Caught in the stretcher chain and dragged by the mule as he was pulling cars off of the cage at foot of shaft. Died Aug. 24th.
	22	James Cunningham,	Irish,	Timber man,	42	M.	1	3	Franklin,	Luzerne,	Fatally scalded by the bursting of a steam pipe on the slope. Died Aug. 24th.
	30	Povel Yenzines,	Lithuanian,	Laborer,	19	S.	....	....	Sugar Notch No. 9,	Luzerne,	Suffocated by after-damp, following an explosion of fire damp in his chamber.
Sept.	9	George Allen,	American,	Driver,	31	M.	1	1	Gaylord,	Luzerne,	Killed by being squeezed between a mule and a car as he was coming out with a loaded trip.
	16	Edward Gallope,	English,	Door man,	70	M	....	....	Buttonwood,	Luzerne,	Killed by a runaway car as he was trying to open his door.
	17	William D. Howells,	American,	Coupler,	17	S.	....	....	No. 1 S. shaft, Nanticoke,	Luzerne,	Was kicked on the abdomen by a mule. Died Sept. 28.
	17	William O. Thomas,	Welsh,	Schute boss,	24	S.	....	....	Stanton,	Luzerne,	As he was closing the windows in the screen room, he fell into the conveyor line, and was dragged by the scrapers.
	18	Andrew Brinoski,	Slav,	Miner,	43	M.	1	9	Boston,	Luzerne,	Killed by a fall of coal after removing the supporting props.
	20	Morgan T. Williams,	Welsh,	Laborer,	66	S	....	....	Red Ash No. 2,	Luzerne,	Run over by a trip of loaded cars near the foot of slope. Died Sept. 22d.
Oct.	5	H. S. Hobbs,	English,	Miner,	48	M.	1	1	No. 5 Plymouth, D. & H.	Luzerne,	Injured by a premature blast Sept. 21st. Died Oct. 5th.
	7	Andrew Kachisa,	Slav,	Laborer,	24	M.	1	....	Dorrance,	Luzerne,	Instantly killed by a fall of roof rock in face of counter.
	12	George Sheloski,	Pole,	Car loader,	19	S.	....	....	Nottingham,	Luzerne,	Squeezed between a gondola and the breaker timber.

TABLE IV—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
12	Thomas Maher, ...	Irish, ...	Laborer, ...	65	M.	1	....	Lance No. 11, ...	Luzerne,.	Thrown against the rib by a car upon which he was riding up the plane, and fatally injured. Died in the hospital Oct. 24th.
25	Ebenezer D. Willams	American, .	Asst. foreman,.	50	M.	1	....	Buttonwood, ...	Luzerne,.	The first five were instantly killed and the last one fatally injured; died on Oct. 27th. A slight explosion of gas had taken place at about 1 o'clock P. M., in the Hillman plane extension, whereby two men had been slightly burned, which also ignited some feeders. The miners supposed that they had extinguished the feeders before going out. As these men were approaching the face a second explosion occurred, which killed them.
25	Gomer Williams,.....	Welsh, ...	Asst. foreman,.	33	M.	1	....	Buttonwood, ...	Luzerne,.	
25	Thomas Guest, ...	American, .	Pipeman, ...	35	M.	1	3	Buttonwood, ...	Luzerne,.	
25	Thomas J. Price,.....	Welsh, ...	Track layer, ...	32	M.	1	....	Buttonwood, ...	Luzerne,.	
25	William S. Phillips,.	Welsh, ...	Miner, ...	51	M.	1	2	Buttonwood, ...	Luzerne,.	
25	Daniel Davis, ...	Welsh, ...	Pulley man,....	38	M.	1	4	Buttonwood, ...	Luzerne,.	
26	Napoleon Bednosh,..	Pole, ...	Laborer, ...	40	M.	1	6	Woodward, ...	Luzerne,.	Instantly killed by a premature blast as he was throwing in material for his miner to tamp a hole.
31	Gilbert Young, Jr.,..	English, ...	Driver, ...	16	S.	....	....	Parrish, ...	Luzerne,.	Fatally burned by an explosion of gas that was ignited by Wascavage in an abandoned chamber. Young died Nov. 2d and Wascavage on Nov. 3d.
31	Walter Wascavage,..	Russian, ...	Laborer, ...	24	M.	1	....	Parrish, ...	Luzerne,.	
Nov. 4	Edwin Cantral,......	English, ...	Laborer, ...	21	M.	1	1	No. 2 Plymouth, D. & H.	Luzerne,.	Was riding on a car down the plane extension. The pulley at the top broke and the car ran away, throwing him off. Died Nov. 10th.
4	Patrick Manley, ...	Irish, ...	Driver, ...	23	S.	....	....	No. 2 Kingston, ...	Luzerne,.	In stepping from one bumper to another he slipped and fell under the cars. He was instantly killed.
5	John Drost, ...	Pole, ...	Miner, ...	50	M.	1	3	Red Ash No. 2, ...	Luzerne,.	Killed by a fall of middle rock as he was barring down loose coal.

	9	Charles Cooney,	American,	Shoveler,	21	S.	....	....	Hollenback breaker,	Luzerne,	His skull was chushed by being caught in the shakers as he was making repairs.
	9	Joseph Miskiel,	Pole,	Miner,	23	S.	....	....	Sugar Notch No. 9,	Luzerne,	Fatally injured by a premature blast. Died Nov. 11th.
	13	Paul Wants,	Slav,	Laborer,	26	M.	1	1	Maxwell No. 20,	Luzerne,	Killed by a fall of rock at the face as he was shoveling coal into the schute.
	15	Joseph Cosick,	Pole,	Laborer,	32	M.	1	2	Stanton No. 7,	Luzerne,	Instantly killed by a fall of rock as he was loading a car at the face of the gangway.
	16	Daniel Reilly,	American,	Mason's helper,	32	S.	....	....	Franklin,	Luzerne,	Killed by a fall of rock as he was clearing a cave-in.
	23	John McGrane,	American,	Miner,	49	M.	1	7	Sugar Notch No. 9,	Luzerne,	Killed by falling down manway as he stepped back from some gas that he ignited in the cross-cut.
	25	George Layou,	American,	Machinist,	30	M.	1	6	No. 7 colliery, Nanticoke,	Luzerne,	Fatally injured by being struck on the head by a block at the mill fan. Died in a few hours.
Dec.	10	Martin Mahosky,	Pole,	Miner,	64	M.	1	1	Lance No. 11,	Luzerne,	Fatally injured by a premature blast. Died Dec. 12th.
	23	Teofil Baker,	Pole,	Oiler,	20	S.	....	....	No. 6 breaker, Glen Lyon.	Luzerne,	Crushed to death between timbers and screen.
	26	John Mangan,	Irish,	Shoveler,	48	M.	1	3	Red Ash No. 1,	Luzerne,	Fatally injured by a rush of culm burying him at the culm bank. Died at the hospital on the next day.
	30	Andrew Coulter,	American,	Slate picker,	15	S.	....	....	Conyngham breaker,	Luzerne,	Caught in the conveyors and crushed to death.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Fourth Anthracite District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	2	Andrew Picto,	Pole,	Laborer,	24	M.	Avondale,	Luzerne,	Injured in riding down the slope with boards.
	3	Severinus Kivler,	American,	Brakeman,	23	S.	No. 5 breaker, Nanticoke,	Luzerne,	Slipped on ice in front of locomotive and his foot was caught, badly injuring it.
	3	Charles Joslewicz,	Pole,	Laborer,	34	M.	Sugar Notch No. 9,	Luzerne,	Hip dislocated; struck by a piece of coal.
	3	Joseph Lonsdale,	English,	Laborer,	22	M.	No. 2 Plymouth, D. & H.,	Luzerne,	Ankle broken by explosion of gas.
	4	Thomas Rowlands,	Welsh,	Miner,	36	M.	No. 1 S. shaft, Nanticoke,	Luzerne,	Small bone in leg broken; platform broke and he slid down a breast.
	4	Alfred Benning,	American,	Patcher,	17	S.	South Wilkes-Barre,	Luzerne,	Leg fractured; mule fell on him.
	5	George Dobson,	English,	Miner,	55	M.	South Wilkes-Barre,	Luzerne,	Leg fractured by fall of coal.
	5	Samuel Derr,	Russian,	Laborer,	45	S.	No. 5 breaker, Nanticoke,	Luzerne,	Internally injured; caught between side of breaker and car.
	5	George Hutchinson,	English,	Plane runner,	23	M.	No. 4 slope, Nanticoke,	Luzerne,	Leg broken; car struck him.
	7	Joseph Took,	American,	Patcher,	15	S.	Hollenback,	Luzerne,	Seriously injured by being squeezed between car and mule.
	7	Joseph Masaker,	American,	Car loader,	24	S.	Buttonwood breaker,	Luzerne,	Arm dislocated by falling from a car.
	7	Andrew Hollis,	Pole,	Miner,	35	M.	Reynolds No. 16,	Luzerne,	Severely injured by a premature blast.
	7	Michael Fergus,	Pole,	Laborer,	18	S.	Reynolds No. 16,	Luzerne,	Severely injured by a premature blast.
	7	Llewelyn Price,	Welsh,	Mine foreman,	43	M.	Franklin slope,	Luzerne,	Leg rfactured; struck by a piece of coal.
	8	Thomas Ratuba,	Pole,	Laborer,	35	S.	South Wilkes-Barre,	Luzerne,	Skull fractured by fall of coal.
	10	David Watkins,	American,	Door boy,	16	S.	Woodward,	Luzerne,	Nose fractured; kicked by a mule.
	11	James Russell,	Irish,	Miner,	39	M	Avondale,	Luzerne,	Leg broken by coal from a car.
	11	James Balmer	Irish,	Laborer,	31	M.	Maxwell,	Luzerne,	Injured on back and ankle by a fall of top.
	16	Thomas J. Morgan,	Welsh,	Coupler,	15	S.	No. 1 S. shaft, Nanticoke,	Luzerne,	Ankle bruised by planks falling from a pile against him.
	17	James Slinock,	Pole,	Miner,	39	M.	No. 2 Plymouth, D. & H.,	Luzerne,	Skull fractured by a fall of coal.
	17	John Smitrovitch,	Lithuanian,	Laborer,	25	S.	No. 6 shaft, Glen Lyon,	Luzerne,	Cut on leg by a piece of coal falling from side.
	18	Jacob Commiskie,	Pole,	Laborer,	42	M.	Chauncey,	Luzerne,	Leg fractured by a fall of coal.
	18	Robert R. Williams,	Welsh,	Miner,	38	M.	So. Wilkes-Barre,	Luzerne,	Leg fractured by falling under a car.
	21	William Goblonski	Lithuanian,	Miner,	23	S.	Lance, No. 11,	Luzerne,	Burned on neck and back by gas.
	22	Anthony Stutz,	Pole,	Miner,	39	M.	Warrior Run,	Luzerne,	Severely burned by gas in an old chamber.

	23	Michael Conway, ...	Irish, ...	Miner, ...	46	M.	No. 4 shaft, Baltimore, ...	Luzerne,.	Injured by fall of rock.
	24	Frank Kosnitzki, ...	Pole, ...	Laborer, ...	27	M.	Avondale, ...	Luzerne,.	Back badly injured; squeezed between car and prop.
	24	Anthony Orilla, ...	Lithuanian,	Miner, ...	30	M.	Nottingham, ...	Luzerne,.	Burned by an explosion of gas.
	24	Fred Lewis, ...	American, ..	Driver, ...	18	S.	No. 3, Baltimore, ...	Luzerne,.	Arm and leg fractured by falling under a car.
	26	Fred. Ratcofski, ...	Pole, ...	Laborer, ...	43	M.	Sugar Notch No. 9, ...	Luzerne,.	Rib fractured by a fall of rock.
	26	Joseph Kororizie, ...	Pole, ...	Miner, ...	26	S.	Woodward, ...	Luzerne,.	Eye injured by a balst.
	26	William Morris, ...	Lithuanian,	Miner, ...	40	S.	Warrior Run, ...	Luzerne,.	Burned by an explosion of gas; ignited by their naked light.
	26	Joseph Siliski, ...	Pole, ...	Laborer, ...	30	S.	Warrior Run, ...	Luzerne,.	
	28	Gabia Sefitsky, ...	Lithuanian,	Laborer, ...	38	M.	No. 1, Kingston Coal Co., ...	Luzerne,.	Severely squeezed; car ran over him.
	29	Metka William, ...	Pole, ...	Miner, ...	26	S.	Franklin, ...	Luzerne,.	Wounded in face b ya premature blast.
	29	John Hawkins, ...	English, ...	Shaftman, ...	50	M.	Bliss, ...	Luzerne,.	Arm broken by a fall of coal.
Feb.	1	Joseph Shepanski, ...	Pole, ...	Slate picker, ...	14	S.	Breaker No. 5, Nanticoke, ...	Luzerne,.	Arm broken; playing about machinery.
	4	John Preusser, ...	Pole, ...	Miner, ...	32	M.	Hollenback, ...	Luzerne,.	Shoulder dislocated by a fall of coal.
	7	Theodore Sedosky, ...	Pole, ...	Miner, ...	35	M.	Shaft No. 1, Kingston Coal Co.	Luzerne,.	Each had a leg fractured; both were struck by the rope while walkink on the gangway.
	7	Villan Sinko, ...	Pole, ...	Laborer, ...	26	S.	Shaft No. 1, Kingston Coal Co.	Luzerne,.	
	9	William Wilkins, ...	Welsh, ...	Slate picker, ...	14	S.	Lance No. 11 breaker, ...	Luzerne,.	Toes injured; caught in patent slate picker while using his feet to push coal.
	12	John Sacoskie, ...	Pole, ...	Miner, ...	50	M.	Sugar Notch No. 9, ...	Luzerne,.	Burned by an explosion of gas.
	13	Fred. Burnby, ...	German, ...	Driver, ...	18	S.	Shaft No. 1, G. seam, Nanticoke.	Luzerne,.	Crushed between cars.
	14	Samuel Morgan, ...	Welsh, ...	Miner, ...	45	M.	Red Ash No. 1, ...	Luzerne,.	Back painfully injured by a fall of coal.
	19	Stanley Resofski, ...	Pole, ...	Laborer, ...	27	M.	Nottingham, ...	Luzerne,.	Injured by a fall of coal.
	20	Mike Babbetzki, ...	Pole, ...	Miner, ...	40	M.	Shaft No. 6 Glen Lyon, ...	Luzerne,.	Leg fractured by a fall of rock.
	23	Peter Piaviey, ...	Pole, ...	Miner, ...	27	S	Lance No. 11, ...	Luzerne,.	Arm broken by a premature blast.
	25	Mike Belshofski, ...	Pole, ...	Laborer, ...	37	M.	Wanamie, ...	Luzerne,.	Squeezed between car and brattice.
	26	John Costelli, ...	American, .	Door boy, ...	16	S.	Reynolds, ...	Luzerne,.	Arm broken while trying to sprag a car.
	27	David Gower, ...	Welsh, ...	Driver, ...	20	S.	No. 4, Kingston Coal Co., ...	Luzerne,.	Foot squeezed between cars.
March	1	John Glower, ...	Lithuanian,	Miner, ...	50	M.	South Wilkes-Barre, ...	Luzerne,.	Severely burned by an explosion of gas.
	1	Stanley Stencoon, ...	Lithuanian,	Laborer, ...	25	S.	South Wilkes-Barre, ...	Luzerne,.	
	2	Arthur Jones, ...	Welsh, ...	Track layer, ...	25	S.	South Wilkes-Barre, ...	Luzerne,.	Thigh fractured; caught between cars while riding on them.
March	2	Harry Vanosky, ...	American, .	Driver, ...	20	S.	Stanton, ...	Luzerne,.	Foot bruised; caught under a car wheel.
	2	Andrew Russin, ...	Pole, ...	Miner, ...	28	M.	Slope No. 6, Glen Lyon, ...	Luzerne,.	Leg broken by a car getting off the track.
	4	John Dugcofski, ...	Pole, ...	Driver, ...	19	S.	Shaft No. 2, Nanticoke, ...	Luzerne,.	Toes crushed; fell under a car while walking beside his team.
	5	George Fignick, ...	Slav, ...	Co. laborer, ...	45	M.	Tunnel No. 6, Glen Lyon, ...	Luzerne,.	Caught by a trip of cars and badly bruised.
	6	Frank Wilbanski, ...	Pole, ...	Miner, ...	39	M.	No. 1 N. shaft, Nanticoke, ...	Luzerne,.	Face and chest bruised by a fall of rock.
	8	Frank Gallagher, ...	American, .	Driver, ...	21	S.	Hollenback, ...	Luzerne,.	Jaw injured and face cut; kicked by a mule.
	9	Stanley Machinski, ...	Pole, ...	Miner, ...	45	S.	S. shaft No. 6, Glen Lyon, ...	Luzerne,.	Arm broken by a premature blast.
	11	John Kelley, ...	American, ..	Foot man, ...	40	S.	Woodward, ...	Luzerne,.	Severely injured by being crushed between car and cage.
	11	Evan Hughes, ...	Welsh, ...	Track layer, ...	56	M	Warrior Run surface, ...	Luzerne,.	Severely injured; fell under car while unhitching mule.
	12	Walter Albert, ...	American, .	Runner, ...	23	M.	No. 6 tunnel, Glen Lyon, ...	Luzerne,.	Finger cut off; coal fell from car.
	13	Evan J. Morgan, ...	Welsh, ...	Laborer, ...	42	M.	No. 2 shaft, Kingston, ...	Luzerne,.	Struck by timber.
	14	Daniel J. Reese, ...	Welsh, ...	Miner, ...	43	M.	Nottingham, ...	Luzerne,.	Slightly burned by explosion of gas.
	14	Anthony Wisinski, ...	Pole, ...	Miner, ...	35	M.	Avondale, ...	Luzerne,.	Burned by explosion of gas.

TABLE V—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
	15	Lukas Dubits,	Russian,	Laborer,	30	M.	No. 6 S. shaft, Glen Lyon,	Luzerne,	Leg fractured by being caught between car and gob.
	18	Jacob Vanis,	Pole,	Miner,	32	M.	Nottingham,	Luzerne,	Ankle bruised while barring down coal.
	18	Joseph Meloski,	Pole,	Miner,	46	M.	Nottingham,	Luzerne,	Burned by an explosion of gas.
	18	Bruno Tercofski,	Pole,	Runner,	18	S.	No. 6 slope, Glen Lyon,	Luzerne,	Two toes mashed; car jumped the track.
	18	Peter Savage,	Pole,	Miner,	27	M.	No. 6 slope, Glen Lyon,	Luzerne,	Back hurt by a fall of rock.
	19	John Enstop,	Pole,	Laborer,	34	M.	Nottingham,	Luzerne,	Seriously burned by an explosion of gos.
	19	Aaron Lloyd,	Welsh,	Miner,	50	M.	S. Wilkes-Barre,	Luzerne,	Leg fractured by a collar in standing timbers.
	20	George P. Richards,	American,	Carpenter,	36	M.	Dodson breaker,	Luzerne,	Three ribs broken; caught on the shaker shaft.
	21	Frank Novak,	Pole,	Miner,	42	M.	No. 1 S. shaft, Nanticoke,	Luzerne,	Face and hands burned by igniting gas.
	21	Eddie Miller,	Pole,	Laborer,	28	M.	No. 1 S. shaft, Nanticoke,	Luzerne,	Face and hands burned by igniting gas.
	23	John Sobeski,	Lithuanian,	Miner,	40	S.	Nottingham,	Luzerne,	Burned on face and hands by striking a match in gas.
	23	Anthony Kashula,	Pole,	Laborer,	33	M.	Lee,	Luzerne,	Ankle broken by a fall of rock.
	23	Thomas Neighs,	German,	Laborer,	53	M.	No. 4, Plymouth,	Luzerne,	Knee crushed; caught between cars.
	25	Zory Kromas,	American,	Driver,	19	S.	South Wilkes-Barre,	Luzerne,	Severely bruised; caught between car and door.
	26	John P. Thomas,	Welsh,	Miner,	36	S.	South Wilkes-Barre,	Luzerne,	Back bruised and cut on head while barring down coal.
	26	Chris. Unger,	German,	Miner,	22	S.	Dorrance,	Luzerne,	Badly burned by igniting half a keg of powder.
	27	George Sontag,	Pole,	Miner,	29	M.	Avondale,	Luzerne,	Face bruised by a premature blast.
	28	Frank Markle,	Pole,	Miner,	52	M.	Avondale,	Luzerne,	Severely injured by a fall of bone coal as they were standing on No. 5 Ross slope.
	28	John Greene,	Pole,	Laborer,	35	S.	Avondale,	Luzerne,	
	28	Thomas Novitski,	Pole,	Laborer,	36	M.	Avondale,	Luzerne,	
	28	Martin Broguski,	Pole,	Laborer,	50	M.	Avondale,	Luzerne,	
	29	John Callahan,	Irish,	Miner,	40	S.	Maxwell,	Luzerne,	Injured while barring coal down.
	29	Joseph Kosgodan,	Pole,	Miner,	35	M.	Dodson,	Luzerne,	Burned by igniting a small body of gas.
	30	Timothy Connahan,	Irish,	Miner,	33	S.	Plymouth No. 2,	Luzerne,	Burned by powder explosion.
April	1	John Lloyd Llewelyn,	American,	Door boy,	15	S.	No. 1 N. shaft, Nanticoke,	Luzerne,	Cheek bone fractured; kicked by a mule.
	1	John Prothero,	American,	Foot man,	19	S.	Lance, No. 11,	Luzerne,	Legs injured by a car running upon him.
	1	Adam Matche,	Slav,	Laborer,	18	S.	Red Ash No. 1,	Luzerne,	Side hurt by a fall of top rock.

April	1	Adam Lataski,	Pole,	Miner,	38	M.	Red Ash No. 1,	Luzerne,	Foot badly bruised by a fall of top rock.
	1	Rolley Benscotter,	American,	Pump runner,	40	M.	No. 2 slope, Nanticoke,	Luzerne,	Leg broken by falling, in moving a pump.
	4	George Trace,	German,	Breaker boss,	26	M.	Lee breaker,	Luzerne,	Compound fracture of arm caught in Sprocket wheel.
	4	Andrew Murphy,	Irish,	Breaker boss,	30	S.	Buttonwood breaker,	Luzerne,	Arm broken; elevator bucket fell on him.
	4	John Konan,	Pole,	Laborer,	24	S.	No. 2 shaft, Nanticoke,	Luzerne,	Arm badly cut by falling on a piece of coal.
	6	William Davis,	American,	Laborer,	37	M.	Maxwell,	Luzerne,	Cut on head and shoulders by fall of coal.
	6	Cornelius Boyle,	Irish,	Miner,	50	S.	Baltimore No. 4 shaft,	Luzerne,	Cut on head by a fall of coal.
	6	William Blockus,	Pole,	Driver,	18	S.	No. 2 shaft, Nanticoke,	Luzerne,	Crushed between cars.
	8	Samuel Dullard,	Irish,	Miner,	62	M.	Conyngham,	Luzerne,	Bruised on the fack by a fall of coal.
	10	Joseph Nasticofski,	Pole,	Miner,	32	M.	No. 4 shaft, Kingston,	Luzerne,	Leg fractured by fall of coal.
	10	John Jones,	American,	Timberman,	30	S.	Red Ash No. 1,	Luzerne,	Sever ecut on forehead; struck by an iron rail.
	15	Louis Chucki,	Pole,	Laborer,	37	M.	Wanamie No. 18,	Luzerne,	Arm broken by a fall of rock.
	18	Adam Yachuba,	Pole,	Laborer,	30	M.	Warrior Run,	Luzerne,	Burned by an explosion of gas.
	18	Peter Liskeg,	Pole,	Runner,	23	S.	No. 3, Plymouth,	Luzerne,	Internally inured by a jar; the engineer allowed the cage to come down too hard.
	18	Arthur German,	American,	Slate picker,	15	S.	Wanamie breaker,	Luzerne,	Toes crushed; caught between spur wheel and plank.
	19	John Lucas,	American,	Laborer,	25	M.	Warrior Run,	Luzerne,	Ankle fractured by a premature blast.
	19	John Pincofski,	Pole,	Tending bars,	14	S.	No. 5 breaker, Nanticoke,	Luzerne,	Arm broken by falling from a plank.
	22	Luke Welch,	Irish,	Laborer,	41	M	Stanton,	Luzerne,	Leg broken by a fall of rock.
	23	Stanley Slevinski,	Pole,	Miner,	28	M.	Dorrance,	Luzerne,	Leg broken by a fall of coal.
	25	Thomas E. Davis,	Welsh,	Miner,	59	M.	No. 3 shaft, Kingston,	Luzerne,	Two ribs broken by a fall of rock.
	25	John Butha,	Slav,	Laborer,	29	M.	No. 3 shaft, Kingston,	Luzerne,	Cut and bruised on head by cage striking him.
	26	Edward Campbell,	American,	Laborer,	25	M.	Maxwell,	Luzerne,	Caught between car and door frame.
	26	Mike Lynch,	Irish,	Miner,	45	S.	Baltimore shaft No. 2,	Luzerne,	Leg broken by a fall of coal.
May	2	Wilson Reider,	American,	Laborer,	25	S.	West End,	Luzerne,	Leg crushed by a fall of rock, necessitating amputation.
	2	Joseph Dushinski,	Pole,	Miner,	41	M.	No. 2 shaft, Nanticoke,	Luzerne,	Hands and fingers badly cut by coal from rib.
	7	Andrew Erwitch,	Slav,	Miner,	33	M.	Shaft No. 3, Kingston,	Luzerne,	Nose broken and cut on face by a blast.
	7	Mike Semlar,	Pole,	Laborer,	33	M.	Maxwell,	Luzerne,	Ribs fractured by a premature blast.
	8	Thomas W. Jones,	Welsh,	Miner,	32	M.	South Wilkes-Barre,	Luzerne,	Caught by a runaway car and severely bruised.
	9	Adam Deitz,	Pole,	Miner,	37	M.	Woodward,	Luzerne,	Badly bruised by a fall of coal.
	9	Joseph Burnet,	Pole,	Laborer,	28	S.	Woodward,	Luzerne,	Badly bruised by a fall of coal.
	17	Joe Simisky,	Pole,	Laborer,	22	S.	South Wilkes-Barre,	Luzerne,	Arm fractured by a piece of coal bursting from the rib.
	18	Adam Maylock,	Pole,	Breaker boss,	20	S.	No. 5 breaker, Nanticoke,	Luzerne,	Head and shoulders hurt; struck by a broken belt.
	20	John Angove,	English,	Miner,	40	M.	Empire No. 4,	Luzerne,	Caught by a rush of coal and cut on head.
	20	Benjamin Cross,	Welsh,	Asst. foreman,	54	M.	Wanamie No. 19,	Luzerne,	Burned by an explosion of gas.
	21	John T. Bailey,	English,	Driver,	18	S.	Bliss surface,	Luzerne,	Leg injured; caught between culm cars.
	21	Mike Sullivan,	Irish,	Mason,	65	M.	No. 2 shaft, Nanticoke,	Luzerne,	Side bruised, struck by plane rope.
	23	William Patchofski,	Pole,	Miner,	35	M.	No. 6 tunnel, Glen Lyon,	Luzerne,	Cut on hand by a piece of coal that he was barring down.
	23	Anthony Tamber,	Pole,	Miner,	34	S.	Bliss,	Luzerne,	Burned by an explosion of powder.
	24	Frank Fry,	Pole,	Loader,	19	S.	Maxwell surface,	Luzerne,	Wrist fractured by falling from a platform.

TABLE V—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
	25	Joseph Battle,	Pole,	Miner,	50	M.	No. 2 Red Ash,	Luzerne,	Leg broken by a fall of bone coal.
	27	Richard Knight,	English,	Pumpman,	39	M.	Maxwell,	Luzerne,	Leg painfully injured; a pipe fell on him.
	27	Adam Newlees,	Pole,	Miner,	22	S.	No. 4 shaft, Kingston,	Luzerne,	Severely burned by an explosion of gas.
	28	Mike Marcarvitch,	Lithuanian,	Miner,	33	S.	Lance No. 11,	Luzerne,	Leg broken by a fall of slote.
	28	Thomas J. Williams,	Welsh,	Miner,	40	S.	Stanton,	Luzerne,	Shoulder broken; slipped on rail and fell.
	29	L. D. Downs,	American,	Laborer,	41	M.	Avondale,	Luzerne,	Badly hurt by a fall of bone coal.
	31	David X. Griffiths,	American,	Door tender,	16	S.	No. 2 shaft, Nanticoke,	Luzerne,	Teeth knocked out; kicked by a mule.
	31	John Costello,	American,	Driver,	18	S.	Maxwell,	Luzerne,	Small bone in hand broken; kicked by a mule.
June	1	**John Bryant,**	Welsh,	Miner,	25	M.	No. 1 shaft, Nanticoke,	Luzerne,	Burned by an explosion of gas.
	1	John Popcorski,	Pole,	Laborer,	21	S.	No. 1 shaft, Nanticoke,	Luzerne,	Burned by an explosion of gas.
	5	Joseph Miscavitch,	Pole,	Miner,	40	S.	Shaft No. 4, Kingston,	Luzerne,	Injured by a fall of clod.
	5	John Boyer,	German,	Timber man,	50	M.	Stanton,	Luzerne,	Bruised about the chest; a prop rolled on him.
	6	William Davey,	English,	Doorman,	62	M.	Lance No. 11,	Luzerne,	Ribs fractured; caught between car and door.
	10	John Smith,	Austrian,	Slate picker,	40	M.	Buttonwood breaker,	Luzerne,	Foot bruised; caught by a key in shaft.
	11	Patrick St. John,	Irish,	Miner,	35	M.	Boston,	Luzerne,	Bruised and cut on face by a fall of coal.
	11	Felix Jones,	Lithuanian,	Miner,	36	M.	Nottingham,	Luzerne,	Burned by an explosion of gas.
	11	Joseph Rivader,	Lithuanian,	Laborer,	26	M.	Nottingham,	Luzerne,	Burned by an explosion of gas.
	12	John T. Evans,	Welsh,	Coupler,	15	S.	Tunnel No. 6, Glen Lyon,	Luzerne,	Jaw fractured; kicked by a mule.
	12	Joseph Sincavitch,	Pole,	Miner,	30	M.	Buttonwood,	Luzerne,	Arm fractured by a piece of coal from a blast.
	13	Steve Seper,	Pole,	Laborer,	27	S.	No. 1 shaft, Kingston,	Luzerne,	Cut on head by a fall of rock.
	14	Anthony Zachchefski,	Pole,	Miner,	48	M.	No. 2 shaft, Nanticoke,	Luzerne,	Severely injured by a fall of rock.
	14	William Roberts,	Welsh,	Door tender,	16	S.	Woodward,	Luzerne,	Fingers mashed while coupling cars.
	14	James P. Cooper,	English,	Laborer,	24	M.	S. Shaft No. 1, Nanticoke,	Luzerne,	Back injured by a fall of slate.
	15	Peter Jennings,	Irish,	Car oiler,	58	S.	Woodward surface,	Luzerne,	Hip injured; struck by a car.
	18	Lawrence Hefferan,	Irish,	Driver,	16	S.	Boston,	Luzerne,	Squeezed between car and prop.
	18	Edward Sturtz,	German,	Miner,	28	M.	Nottingham,	Luzerne,	Leg bruised by a piece of coal rolling against it.
	19	Rufus Glecko,	Italian,	Brakeman,	21	S.	Breaker No. 6, Glen Lyon,	Luzerne,	Toe mashed by a car running over it.
	19	Anthony Stavitzkl,	Pole,	Miner,	46	M.	No. 1 N. shaft, Nanticoke,	Luzerne,	Back bruised by a fall of bony coal.
	20	Arthur Long,	American,	Carpenter,	53	M.	Nottingham,	Luzerne,	Leg broken; struck by a piece of timber.

	20	John Hanslee.	Slav,	Laborer,	40	S.	Nottingham.	Luzerne,.	Injured by a premature blast.
	24	George Massakee,	American,	Miner,	59	M.	Reynolds No. 16,	Luzerne,.	Ankle fractured; struck by rope.
	25	Joseph Starron,	Austrian,	Coupler,	15	S.	No. 6 slope, Glen Lyon,	Luzerne,.	Kicked on face by a mule.
	27	Paul Slavitch,	Lithuanian,	Miner,	25	M.	Woodward,	Luzerne,.	Face and hands burned by an explosion of gas.
	29	Lewis Morgan,	American,	Door boy,	24	S.	Wanamie No. 18,	Luzerne,.	Jaw fractured; kicked by a mule.
	29	Joseph Strapsinski,	Pole,	Laborer,	40	M.	No. 6 tunnel, Glen Lyon,	Luzerne,.	Wrist fractured by being caught in loose coal.
July	1	John Boleck,	Pole,	Miner,	39	S.	Sugar Notch No. 9,	Luzerne,.	Thighs and back bruised; caught between car and platform.
	1	Morris Blower,	Welsh,	Miner,	38	M.	South Wilkes-Barre,	Luzerne,.	Arm fractured by a premature blast.
	1	Mike Mahenski,	Pole,	Miner,	35	M.	South Wilkes-Barre,	Luzerne,.	Shoulder dislocated while lifting a coupling to top of car.
	2	Andrew Solitzki,	Slav,	Slate picker,	14	S.	No. 5 breaker, Nanticoke,	Luzerne,.	Leg broken; caught in conveyor line.
	3	Thomas Herron,	Irish,	Miner,	40	M.	South Wilkes-Barre,	Luzerne,.	Leg fractured by coal from a blast.
	5	John Vivian,	English,	Driver,	17	S.	No. 1 N. shaft, Nanticoke,	Luzerne,.	Mule fell on him, which broke his leg.
	9	George Pascoe,	American,	Laborer,	23	S.	South Wilkes-Barre,	Luzerne,.	Dislocated his knee cap while shoveling coal.
	10	James B. Lewis,	Welsh,	Mine foreman,	40	M.	Woodward,	Luzerne,.	Bruised on back by a fall of rock.
	10	Rudolph Lewis,	German,	Carpenter,	40	M.	Nottingham No. 15,	Luzerne,.	Spike ran into his foot.
	11	Leo Bellofki,	Lithuanian,	Miner,	43	M.	No. 2 shaft, Nanticoke,	Luzerne,.	Back hurt by a fall of slate.
	13	Andrew Yabkoskie,	Pole,	Miner,	48	M.	No. 7 breaker, Nanticoke,	Luzerne,	Injured by fall of coal.
	19	John Benya,	Slav,	Laborer,	19	S.	No. 2 shaft, Nanticoke,	Luzerne,.	Struck by a piece of coal from the face.
	22	Phillip Blaney,	English,	Miner,	48	M.	Maxwell,	Luzerne,.	Body bruised by falling from a platform in the shaft.
	26	Michael Higgins,	Irish,	Laborer,	55	W.	No. 6, Glen Lyon,	Luzerne,.	Injured while removing coupling from car.
	26	Paul Pellas,	Lithuanian,	Miner,	44	M.	Nottingham No. 15,	Luzerne,.	Face and neck cut by premature blast.
	26	Charles Derr,	English,	Trackman,	46	M.	No. 2 shaft, Nanticoke,	Luzerne,.	Leg squeezed by being caught between cars.
	30	George Mutchler,	Pole,	Laborer,	28	M.	Avondale,	Luzerne,.	Cut on head by premature blast.
	31	James Traher,	American,	Foot man,	19	S.	No. 2 shaft, Nanticoke,	Luzerne,.	Ankle and foot hurt; thrown under loaded car.
Aug.	1	William J. Jones,	American,	Pipeman,	23	S.	South Wilkes-Barre,	Luzerne,.	Bone fractured in toe; struck it with an axe.
	3	Phillip Dinko,	Pole,	Miner,	40	M.	Nottingham,	Luzerne,.	Ankle bruised by a fall of slate.
	3	Stanley McAllis,	Pole,	Laborer,	26	S.	Stanton,	Luzerne,.	Leg bruised: bumped between cars.
	6	Thomas Markavitch,	Lithuanian,	Miner,	45	M.	Lance No. 11,	Luzerne,.	Knee fractured by a fall of rock.
	7	Andrew Karshner,	German,	Laborer,	27	M.	No. 5 shaft, Nanticoke,	Luzerne,.	Knee cap split by jumping from cars.
	8	Joseph Murphy,	American,	Door boy,	14	S.	Maxwell,	Luzerne,.	Left leg broken and body bruised by a car.
	9	John B. Katsmerick,	Pole,	Miner,	35	M.	No. 5 shaft, Nanticoke,	Luzerne,.	Cut on back by a piece of coal from a blast.
	9	Frank Makofski,	Pole,	Runner,	18	S.	South shaft, Glen Lyon,	Luzerne,.	Four fingers cut; caught by coal on top of car.
	10	Frank Taylor,	Pole,	Loader,	29	S.	Hollenback breaker,	Luzerne,.	Hip bruised; caught between gondola and breaker timber.
	12	Andrew Burnot,	Lithuanian,	Laborer,	35	M.	Conyngham breaker,	Luzerne,.	Hip bruised: caught between gondola and breaker post.
	13	James Mundy,	Irish,	Miner,	30	S.	Conyngham,	Luzerne,.	HiHp injured by a fall of rock.
	16	Joseph Jadwith,	Hungarian,	Miner,	44	M.	Lance No. 11,	Luzerne,.	Burned by an explosion of gas.
	18	Frank Smoulter,	German,	Fan engineer,	60	M.	Stanton No. 7,	Luzerne,.	Caught in the fan and cut on body.

TABLE V—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
	18	Aaron Weida,	American,	Carpenter,	55	M.	Stanton No. 7,	Luzerne,	Right arm broken; fell from a scaffold.
	18	John Yenshaw,	Slav,	Road cleaner,	58	M.	Nattingham No. 15,	Luzerne,	Ribs fractured by a lever while putting a car on track.
	20	John Englehart,	German,	Miner,	26	M.	No. 1 S. shaft, Nanticoke,	Luzerne,	Foot bruised by a fall of slate.
	20	Frank Vinshinski,	Pole,	Miner,	30	M.	Lance No. 11,	Luzerne,	Leg broken by a fall of rock.
	21	Frank Lusinski,	German,	Miner,	38	M.	Avondale,	Luzerne,	Legs bruised by a fall of bony.
	21	John Kosinski,	Lithuanian,	Miner,	48	M.	South Wilkes-Barre,	Luzerne,	Cut on head and hands by a premature blast.
	22	William Tuholski,	Pole,	Laborer,	26	S.	Baltimore tunnel,	Luzerne,	Skull fractured by a fall of top coal.
	22	John Ribalski,	German,	Miner,	45	M.	South Wilkes-Barre,	Luzerne,	Burned on face and hands by explosion of gas.
	22	Toney Hochreiter,	German,	Timber cutter,	66	M.	South Wilkes-Barre,	Luzerne,	Shoulder and arm bruised; struck by props.
	22	William Collitt,	American,	Miner,	43	M.	South Wilkes-Barre,	Luzerne,	Cut and bruised on arm by fall of top coal.
	22	Joseph Munyak,	Pole,	Laborer,	27	M.	No. 6 slope, Glen Lyon,	Luzerne,	Leg broken by a fall of rock.
	24	Michael J. O'Brien,	Irish,	Foot man,	44	S.	No. 5 shaft, Plymouth,	Luzerne,	Arm broken and skull fractured by shaft cage.
	26	Thomas Quinn,	Irish,	Miner,	32	S.	South Wilkes-Barre,	Luzerne,	Cut and bruised on arm and back by fall of coal.
	26	Joseph Ferens,	Pole,	Miner,	35	M.	Warrior Run,	Luzerne,	Burned on hands and face by an explosion of gas.
	26	Nickola Nelawaski,	Pole,	Laborer,	22	S.	Warrior Run,	Luzerne,	
	28	Thomas Davis,	Welsh,	Miner,	38	S.	Hollenback,	Luzerne,	Right leg fractured by a fall of coal.
	29	August Scratchman,	German,	Laborer,	35	M.	South Wilkes-Barre,	Luzerne,	Leg fractured by a fall of coal.
	30	Charles Skiperlage,	Pole,	Miner,	23	S.	Sugar Notch No. 9,	Luzerne,	Burned by an explosion of gas.
	31	Louis Kowitzkie,	Pole,	Driver,	16	S.	No. 5 breaker, Nanticoke,	Luzerne,	Leg squeezed by ash cars at breaker.
	31	Fred. Rodmaker,	German,	Miner,	45	S.	No. 6 shaft, Glen Lyon,	Luzerne,	Burned by an explosion of gas.
	31	Andrew Bazig,	Pole,	Rockman,	35	S.	Nottingham No. 15,	Luzerne,	Right leg and shoulder hurt by fall of slate.
	31	Thomas N. Jones,	Welsh,	Miner,	51	M.	Hollenback,	Luzerne,	Injured by a fall of bony coal.
	31	Joseph O'Linus,	Lithuanian,	Laborer,	23	S.	Hollenback,	Luzerne,	
Sept.	5	William Beddow,	American,	Miner,	32	S.	Nottingham,	Luzerne,	Cut on head and shoulder by a fall of coal
	7	Walter Rull,	English,	Driver,	16	S.	Lee,	Luzerne,	Skull fractured; kicked by a mule.

	10	John Mahady,	American,	Patcher,	18	S.	Maxwell,	Luzerne,	Leg broken by a car.
	10	Frank Johinpooley,	Lithuanian,	Laborer,	20	S.	Wanamie No. 18,	Luzerne,	Back injured by falling into an empty car.
	11	William Streekroat,	American,	Slate picker,	14	S.	No. 5 breaker, Nanticoke,	Luzerne,	Arm and leg broken by being dragged in scraper line.
	12	Andrew Overchok,	Pole,	Miner,	40	M.	Reynolds No. 16,	Luzerne,	Leg hurt by a fall of coal.
	12	Frank Kochinski,	Pole,	Laborer,	22	S.	No. 2 shaft, Nanticoke,	Luzerne,	Foot hurt; piece of rock fell from between timbers.
	12	John Barroom,	Pole,	Laborer,	27	S.	Maxwell,	Luzerne,	Leg fractured by a fall of coal.
	12	Inich Keating,	American,	Miner,	49	M.	No. 2 shaft, Nanticoke,	Luzerne,	Arm broken by a fall of coal.
	13	Wyndham Evans,	American,	Door boy,	14	S.	No. 4 slope, Nanticoke,	Luzerne,	Leg broken by being caught in a car brake.
	14	Arthur Price,	Welsh,	Timber man,	46	M.	Dodson,	Luzerne,	Three ribs broken by falling from a plank.
	14	William Morgans,	Welsh,	Laborer,	60	M.	Wanamie No. 18,	Luzerne,	A pipe rolled on his leg and broke it.
	16	William Devaniskie,	Pole,	Miner,	40	S.	Parrish,	Luzerne,	Burned by an explosion of gas.
	17	Ulick Coshen,	Pole,	Laborer,	28	M.	Maxwell,	Luzerne,	Thumb and two fingers mashed by a fall of coal.
	18	Joseph Petroskie,	Hungarian,	Laborer,	22	M.	Red Ash No. 2,	Luzerne,	Hip dislocated by a fall of rock.
	20	Harry Mills,	American,	Miner,	24	S.	No. 2 shaft, Alden,	Luzerne,	Hips bruised by a fall of loose coal.
	20	Frank Dunellis,	Lithuanian,	Miner,	29	M.	Hollenback,	Luzerne,	Leg bruised by a fall of rock.
	21	Dominick Devers,	Irish,	Miner,	32	M.	South Wilkes-Barre,	Luzerne,	Cut and bruised on head by a fall of coal.
	24	James Jones,	Welsh,	Miner,	26	M.	South Wilkes-Barre,	Luzerne,	Burned by gas.
	24	Charles McDonald,	American,	Laborer,	21	S.	South Wilkes-Barre,	Luzerne,	
	26	John Jonasanski,	Pole,	Miner,	35	M.	South Wilkes-Barre,	Luzerne,	Burned on face by gas.
	26	Michael Gaughan,	American,	Door boy,	20	S.	Maxwell,	Luzerne,	Injured; caught between car and door.
	27	Edward Maguire,	American,	Bell boy,	15	S.	No. 2 Plymouth,	Luzerne,	Caught by reversing link of shaft engine and his leg was broken.
	30	John Kobak,	Pole,	Miner,	35	M.	Wanamie No. 18,	Luzerne,	Burned about hands and face by explosion of gas.
Oct.	1	Frank Lavanda,	Pole,	Laborer,	37	M.	No. 1 shaft, Nanticoke,	Luzerne,	Leg broken by a fall of coal.
	2	John Jones,	Welsh,	Patcher,	16	S.	Hollenback,	Luzerne,	Leg broken while he was coupling cars.
	4	William Poshick,	Slav,	Miner,	30	S.	No. 4 shaft, Kingston,	Luzerne,	Back injured by a fall of rock.
	4	Thomas Nolan,	Irish,	Driver,	18	S.	Woodward,	Luzerne,	Body bruised; caught between mule and car.
	5	John Pascoe,	American,	Footman,	25	S.	South Wilkes-Barre,	Luzerne,	Knee squeezed between cars.
	5	J. A. Walker,	English,	Miner,	40	M.	No. 2 Plymouth, D. & H.,	Luzerne,	Arm broken; a collar fell on it as he was timbering.
	5	John Morgans,	Welsh,	Driver,	23	M.	Gaylord,	Luzerne,	Leg mashed by a car running over it necessitating amputation.
	5	Michael Androwkites,	Pole,	Laborer,	26	S.	No. 3 Plymouth, D. & H.,	Luzerne,	Leg broken by a fall of coal.
	7	Carl Sacosky,	Pole,	Miner,	25	M.	Maxwell,	Luzerne,	Shoulder dislocated by a fall of rock.
	7	Frank Abomikas,	Lithuanian,	Miner,	27	S.	Woodward,	Luzerne,	Bruised by a fall of roof.
	7	James Asken,	American,	Miner,	54	M.	Parrish,	Luzerne,	Burned by explosion of gas.
	7	George Hanks,	American,	Door boy,	15	S.	Conyngham,	Luzerne,	Cut on head; struck by a prop.
	7	James Kane,	Irish,	Rock miner,	35	M.	Sugar Notch No. 9,	Luzerne,	Both were injured by a fall of rock in the tunnel.
	7	Henry Dickson,	American,	Rock miner,	28	S.	Sugar Notch No. 9,	Luzerne,	
	8	Charles Rokofski,	Pole,	Miner,	38	M.	Dodson,	Luzerne,	Burned on hands and face by an explosion of gas.
	9	Anthony Smith,	Lithuanian,	Miner,	32	M.	Nottingham No. 15,	Luzerne,	Injured by premature blast.
	10	Martin Cazanski,	Lithuanian,	Laborer,	31	M.	Sugar Notch No. 9,	Luzerne,	Leg broken by a fall of rock.
	11	Paul Misalavich,	Lithuanian,	Laborer,	28	M.	Woodward,	Luzerne,	Cut on head by a premature blast.
	14	Anthony Briskie,	Pole,	Team driver,	18	S.	No. 6 tunnel, Glen Lyon,	Luzerne,	Finger mashed between a rail and rock.

TABLE V—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
	15	John Micoskie,	Pole,	Laborer,	47	M.	No. 1 N. Shaft, Nanticoke,.	Luzerne,.	Leg broken; run over by a car.
	17	Joseph Gelko,	American,	Driver,	16	S.	No. 4 Plymouth, D. & H.,	Luzerne,.	Thumb crushed between stretcher and car.
	17	John Benson,	Irish,	Driver,	24	M.	No. 1 S. shaft, Nanticoke,.	Luzerne,.	Arm broken; squeezed between car and rib.
	18	Mathew Cochrane,	Irish,	Miner,	47	M.	Sugar Notch No. 9,	Luzerne,.	Arm broken by falling on a rail.
	21	Mike Bernick,	Pole,	Miner,	48	M.	No. 1 N. shaft, Nanticoke,.	Luzerne,.	Foot broken; caught between car and rail.
	21	John Coosack,	Pole,	Laborer,	30	M.	No. 4 Kingston Coal Co.,	Luzerne,.	Cut on head and back by a fall of coal.
	22	Peter Androvitch,	Pole,	Miner,	25	S.	Stanton No. 7,	Luzerne,.	Leg broken by a fall of coal.
	23	Anthony Wilkes,	Pole,	Laborer,	30	M.	Wanamie No. 18,	Luzerne,.	Leg broken by a fall of coal.
	24	John Dorik,	Hungarian,.	Laborer,	32	M.	No. 2 shaft, Nanticoke,	Luzerne,.	Foot cut by a blow from an axe.
	24	Frank Tuscowski,	Pole,	Miner,	30	S.	Woodward,	Luzerne,.	Leg broken by a fall of coal.
	25	Frank Kuboliski	German,	Miner,	49	M.	No. 2 shaft, Alden,	Luzerne,.	Injured by a fall of coal.
	25	Peter Davies,	Pole,	Laborer,	22	S.	Buttonwood,	Luzerne,.	Burned on face and hands by an explosion of gas.
	25	Adam Joecoskie,	Pole,	Laborer,	27	S.	Buttonwood,	Luzerne,.	
	25	Daniel W. Davies,	Welsh,	Mine foreman,.	58	M.	Buttonwood,	Luzerne,.	
	25	Evan Evans,	Welsh,	Brattice man,.	37	M.	Buttonwood,	Luzerne,.	
	25	William Frey,	American,	Track layer,	44	S.	Buttonwood,	Luzerne,.	
	25	Patrick McHale,	Irish,	Door man,	62	S.	Buttonwood,	Luzerne,.	
	26	James Knecht,	American,	Miner,	44	M.	No. 5 Plymouth, D. & H.,	Luzerne,.	Back and arm bruised by a fall of slate.
	30	Paul Dioski,	Pole,	Rock man,	55	S.	No. 1 S. shaft, Nanticoke,	Luzerne,.	Leg broken between car brake and prop.
	30	John Brislin,	American,	Driver,	18	S.	No. 2 Plymouth, D. & H.,	Luzerne,.	Ankle dislocated; foot caught under rail.
	31	Michael Terofski,	Russian,	Miner,	34	M.	Parrish,	Luzerne,.	Burned by an explosion of gas.
	31	Samuel Caley,	English,	Miner,	33	M.	Wanamie No. 18,	Luzerne,.	Jaw fractured by falling from a car.
Nov.	2	Michael Cullen,	American,	Runner,	18	S.	Dorrance,	Luzerne,.	Leg broken by a fall of roof.
	4	David G. Thomas,	American,	Patcher,	17	S.	South Wilkes-Barre,	Luzerne,.	Head badly bruised by a car jumping the track.
	6	William Chalker,	English,	Miner,	40	M.	Wanamie No. 18,	Luzerne,.	Hip dislocated while barring down coal.
	8	Evan Lewis,	American,	Runner,	32	S.	Dodson,	Luzerne,.	Leg broken by a car jumping the track.
	12	Adam Derescavage,	Lithuanian,	Laborer,	26	M.	Lance No. 11,	Luzerne,.	Burned by explosion of gas.
	12	Neal Conway,	Irish,	Miner,	38	M.	Sugar Notch No. 9,	Luzerne,.	Burned by explosion of gas.
	12	Joseph Smith,	Pole,	Laborer,	21	S.	Sugar Notch No. 9,	Luzerne,.	Burned by explosion of gas.
	12	John H. Thomas,	American,	Door boy,	14	S.	Stanton No. 7,	Luzerne,.	Leg broken; caught between bumpers of cars.

	14	Stanley Pospay,	Pole,	Laborer,	25	S.	Wanamie No. 18,	Luzerne,	Burned on hands and face by an explosion of powder.
	14	John Keizer,	American,	Miner,	41	S.	Wanamie No. 18,	Luzerne,	Leg broken by a fall of rock.
	15	Albert Dalota,	Pole,	Miner,	45	S.	S. Wilkes-Barre,	Luzerne,	Leg broken by fall of rock.
	16	Zory Kiomes,	American,	Driver,	18	S.	S. Wilkes-Barre,	Luzerne,	Chest bruised; kicked by a mule.
	16	Mike Brenadin,	Pole,	Miner,	36	M.	No. 6 tunnel, Glen Lyon,	Luzerne,	Two fingers cut off by a fall of rock.
	21	John Norman,	American,	Bell boy,	16	S.	Warrior Run,	Luzerne,	Arm broken by falling at the foot of the slope.
	27	John Wanchea,	Pole,	Laborer,	28	S.	Lance No. 11,	Luzerne,	Burned by an explosion of gas.
	29	James Sheridan,	Irish,	Door boy,	16	S.	Boston,	Luzerne,	Bitten by a mule.
Dec.	3	Arthur Nadonly,	German,	Laborer,	22	S.	No. 7 breaker, Nanticoke,	Luzerne,	Finger crushed by a lever in lifting a car.
	4	Joseph Croop,	American,	Brk. foreman,	50	M.	No. 7 breaker, Nanticoke,	Luzerne,	Side hurt by falling upon a screen.
	4	Edward Grady,	Irish,	Miner,	25	S.	Maxwell,	Luzerne,	Burned by an explosion of gas.
	7	Anthony Yarana,	Austrian,	Laborer,	26	M.	Avondale,	Luzerne,	Burned by an explosion of gas.
	7	Daniel Murray,	American,	Slate picker,	17	S.	Reynolds,	Luzerne,	Leg broken by a barrel of oil striking it.
	9	Thomas R. Williams,	Welsh,	Mine foreman,	57	M.	No. 4 Stearns, Susquehanna Coal Co.	Luzerne,	Leg fractured by a fall of coal.
	10	Stanley Swartz,	Pole,	Driver,	17	S.	Dorrance,	Luzerne,	Leg broken; struck by rope on slope.
	11	Harry Finley,	American,	Foot man,	28	S.	Maxwell,	Luzerne,	Arm and leg broken; struck by a piece of pipe.
	11	Morgan Beynon,	Welsh,	Miner,	44	M.	No. 1 N. shaft, Nanticoke,	Luzerne,	Injured by a fall of roof.
	12	William Stavinski,	Pole,	Laborer,	20	S.	Sugar Notch No. 9,	Luzerne,	Leg broken; struck by a piece of coal.
	12	John Connelly,	American,	Laborer,	24	S.	Jersey annex No. 8,	Luzerne,	Arm crushed by cog wheels.
	12	Con. McCole,	American,	Laborer,	18	S.	Conyngham,	Luzerne,	Leg broken; boards slid on him.
	12	Anthony Proasic,	Bohemian,	Miner,	34	M.	Boston,	Luzerne,	Ribs broken; caught between car and prop.
	16	Nick Pascoe,	American,	Driver,	20	S.	South Wilkes-Barre,	Luzerne,	Leg fractured; caught between car and plank.
	18	Edwin E. Pierce,	American,	Door boy,	15	S.	No. 5 Plymouth, D. & H.,	Luzerne,	Kicked on the jaw by a mule.
	18	John A. Jenkins,	American,	Driver,	20	S.	Woodward,	Luzerne,	Nose broken; kicked by a mule.
	26	Steve Delma,	Russian,	Shoveler,	18	S.	Red Ash No. 1,	Luzerne,	Burned by hot culm.
	27	Peter N. Zitonavage,	Lithuanian,	Miner,	28	M.	No. 6 shaft, Glen Lyon,	Luzerne,	Leg broken by a prop falling on him.
	28	Thomas Husband,	Welsh,	Mason,	57	M.	No. 5 Plymouth, D. & H.,	Luzerne,	Leg broken; caught between cars.
	30	Louis Brink,	American,	Teamster,	19	S.	No. 6 shaft, Glen Lyon,	Luzerne,	Arm broken; caught between car and prop.

FIFTH ANTHRACITE DISTRICT.

LUZERNE AND CARBON COUNTIES.

Hazleton, Pa., February 21, 1902.

Hon. James W. Latta, Secretary of Internal Affairs:

Sir: I have the honor to submit herewith my sixth annual report as Inspector of Mines for the Fifth Anthracite District for the year ending December 31, 1901.

The total quantity of coal produced in this district was 6,374,939 tons, which compared with the previous year was an increase of 204,155 tons. It may be said, that with one exception, it was the largest production for any one year in the history of the district, and had it not been for the heavy rains, which flooded the collieries of the district during the months of August and December, the production would have been very much greater. Operations were suspended for several weeks; in fact, some collieries have not yet recovered.

The total shipments, including local sales, were 5,656,913 tons. Sixteen thousand one hundred and eight persons were employed on an average of 223 days, and 1,012,879 pounds of dynamite and 2,016,150 pounds of soda powder were used in the mines and on the stripping operations.

The total number of accidents was 149, of which sixty were fatal and eighty-nine non-fatal, leaving thirty-six wives widows and seventy-five children orphans.

I am pleased to state that the operators throughout this district have all complied with the act of Assembly No. 212 by constructing and equipping medical rooms for the purpose of caring for those injured in the mines.

This report contains in addition to the usual tables, a table showing the various nationalities of men employed and the number at each operation, also a table showing the methods of ventilation, revolution and diameter of fans and the quantity of air in circulation, as reported to this Department for the month of November, together with a brief description of important improvements made at a number of the collieries of the district during the year.

In conclusion, I would state that with two exceptions, the operations throughout the district, prior to the flood of December 14, 1901, were in first class condition, that is as to their safety and sanitary condition.

Very respectfully,
W. H. DAVIES,
Inspector of Mines.

Production of Coal During the Year 1901.

	Tons.
A. Pardee & Co.,	416,293.03
Coxe Brothers & Co., Incorporated,	1,079,229.03
Lehigh Coal and Navigation Company,	931,359.17
G. B. Markle & Co.,	1,062,841.08
The Lehigh Valley Coal Company,	982,365.05
Calvin Pardee & Co.,	498,328.07
Estate of A. S. Van Wickle,	557,992.00
Upper Lehigh Coal Company,	256,596.14
C. M. Dodson & Co.,	206,667.00
John S. Wentz & Co.,	149,204.00
M. S. Kemmerer & Co.,	100,917.07
Audenried Coal Company,	78,170.19
Lehigh and Wilkes-Barre Coal Company,	38,000.00
Miscellaneous operations,	16,964.00
Total,	6,374,939.03

The Total Production was Made up as Follows.

Shipped to market by railroad,	5,529,152.04
Sold at mines to local trade,	127,761.00
Consumed to generate steam and heat,	718,025.19
Total,	6,374,939.03

Number of Fatal Accidents and Tons of Coal Mined per Life Lost.

Names of Operators.	Number of lives lost.	Tons of coal mined per life lost.
A. Pardee & Co.,	10	41,693
Coxe Bros. & Co., Inc.,	7	154,175
Lehigh Coal and Navigation Co.,	5	186,271
G. B. Markle & Co.,	9	118,093
Lehigh Valley Coal Co.,	15	65,491
Estate of A. S. Van Wickle,	5	111,598
Calvin Pardee & Co.,	2	249,164
Upper Lehigh Coal Co.,	2	128,298
C. M. Dodson & Co.,	5	41,335
Total and average,	60	106,248

Number of Non-Fatal Accidents and Tons of Coal Mined per Person Injured.

Names of Operators.	Number of persons injured.	Tons of coal mined per person injured.
A. Pardee & Co.,	4	104,073
Coxe Brothers & Co., Inc.,	17	63.484
Lehigh Coal and Navigation Co.,	9	103,484
G. B. Markle & Co.,	17	62,520
Lehigh Valley Coal Co.,	9	109,150
Estate of A. S. Van Wickle,	13	45,302
Calvin Pardee & Co.,	11	42.922
Upper Lehigh Coal Co.,	2	128,298
C. M. Dodson & Co.,	3	68,892
John S. Wentz & Co.,	1	149,204
M. O. Kemmerer & Co.,	2	50,458
Audenreid Coal Co.,	1	78,170
Total and average,	89	71,629

Number of Fatal and Non-Fatal Accidents, and Tons of Coal Mined per Accident.

Names of Operators.	Number of accidents, fatal and non-fatal.	Tons of coal mined per accident.
A. Pardee & Co.,	14	29,735
Coxe Brothers & Co., Inc.,	24	44,967
Lehigh Coal and Navigation Co.,	14	66,525
G. B. Markle & Co.,	26	40,878
Lehigh Valley Coal Co.,	24	40,931
Estate of A. S. Van Wickle,	18	30,991
Calvin Pardee & Co.,	13	38,332
Upper Lehigh Coal Co.,	4	64,149
C. M. Dodson & Co.,	8	25,834
M. O. Kemmerer & Co.,	2	50,458
J. S. Wentz & Co.,	1	149,204
Audenreid Coal Co.,	1	78,170
Total and average,	149	42,784

Comparative Statement Showing the Number of Tons Produced, Number of Fatalities, Tons of Coal Produced per Life Lost, Number of Persons Employed per fatal accident, and Number of Deaths per Thousand Employed each Year for the Past Ten Years.

Years.	Production of coal in tons.	Number of fatal accidents.	Tons of coal produced per fatal accident.	Number of persons employed.	Number of persons employed per life lost.	Number of deaths per thousand persons employed.
1892,	5,842,721	48	121,725	16,277	282.28	3,307
1893,	6,239,068	58	107,570	17,540	339.19	3,103
1894,	6,132,627	58	105,735	18,361	302.48	3,561
1895,	6,590,966	52	126,750	18,467	316.57	3,470
1896,	5,872,427	42	139,819	17,568	355.13	1,941
1897,	5,487,550	33	166,289	17,119	418.28	2,184
1898,	5,555,850	32	173,620	14,649	457.78	3,014
1899,	6,191,027	43	143,977	14,293	322.39	3,606
1900,	6,170,784	40	154,269	15,111	377.75	2,666
1901,	6,374,939	60	106,248	16,106	268.43	3,750

Nationalities of Persons Fatally and Non-Fatally Injured.

	Americans.	French.	Welsh.	Germans.	Irish.	Hungarians.	Poles.	Austrians.	Italians.	Slavs.	Total.
Fatal accidents,	14	1	......	3	2	18	14	2	1	5	60
Non-fatal accidents,	24	......	2	4	5	25	10	5	9	5	89
Total,	38	1	2	7	7	43	24	7	10	10	149

TABLE of comparison showing the number of different causes of fatal accidents in this District for the past ten years.

Causes of Accidents	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	Total.
Asphyxiated by gas,	......	......	......	......	......	5	......	......	......	......	5
By explosions of gas,	......	1	1	1	......	......	......	2	2	......	7
By falls of coal, rock and clay,	25	18	21	24	18	9	16	18	14	29	192
By premature blasts and explosions of powder,	2	11	15	7	2	2	1	2	4	6	52
By mine, railroad and dump cars, including motors, in and about the mines,	15	15	15	13	11	10	8	9	13	15	121
By machinery,	3	4	3	2	4	2	3	2	1	2	26
By boiler explosions,	......	......	......	1	3	......	......	......	......	......	4
From miscellaneous causes inside and on the surface,	3	9	3	4	4	5	4	10	6	8	56
Total,	48	58	58	52	42	33	32	43	40	60	466

Recapitulation of fatal accidents as per Table IV.

Nationality.	Number killed.	Per cent.	Occupation.	Number killed.	Per cent.	Causes of Accidents.	Number killed.	Per cent.
Americans,	14	.023+	Miners,	30	.05	By falls of coal, clod and rock inside,	29	.048+
Germans,	3	.205+	Laborers,	13	.021+	By premature blasts,	5	.208+
Irish,	2	.203+	Company laborers,	4	.206+	By explosions of powder,	1	.201+
French,	1	.201+	Motor runner,	1	.201+	By locomotives and air motors,	3	.205+
Hungarians,	18	.03	Firemen,	2	.203+	By mine cars in the mines,	5	.208+
Poles,	14	.023+	Outside laborers,	3	.205+	By mine and railroad cars on the surface,	6	.010
Slavs,	5	.208+	Slate pickers,	2	.203+	By mine and dump cars on stripping,	1	.201+
Austrians,	2	.203+	Jig runners,	1	.201+	By falling down shaft,	1	.201+
Italians,	1	.201+	Drivers and patchers,	4	.206+	By machinery,	2	.203+
						From miscellaneous causes in the mines,	5	.208+
						From miscellaneous causes on the surface,	2	.203+
	60	100		60	100		60	100

Recapitulation of non-fatal accidents as per Table V.

Occupation.	Number injured.	Per cent.	Nationality.	Number injured.	Per cent.	Causes of Accidents.	Number injured.	Per cent.
Foreman,	2	.002+	Americans,	24	.027	By explosions of C. H. gas,	4	.2044+
Miners,	32	.035+	Welsh,	2	.002+	By fall of coal, clod and rock inside,	24	.0269+
Mine laborers,	15	.016+	Germans,	4	.004+	By fall of coal, rock and clay on stripping,	3	.2033+
Drivers and patchers,	4	.004+	Irish,	5	.005+	By premature blasts, etc.,	4	.2041+
Company laborers,	3	.003+	Hungarians,	25	.028	By explosions of powder,	6	.2067+
Door boys,	2	.002+	Poles,	10	.011+	By mine cars in the mines,	12	.0134+
Outside laborers,	17	.019+	Slavs,	5	.005+	By mine and railroad cars on surface,	13	.0146+
Brakemen and pumpmen,	2	.002+	Austrians,	5	.005+	By mine and dump cars on stripping,	2	.2022+
Jackmen,	2	.002+	Italians,	9	.010	By locomotive and air motors,	4	.2044+
Firemen,	1	.201+				By machinery,	5	.2056+
Slate pickers,	2	.202+				From miscellaneous causes inside,	7	.2078+
Jig runners,	1	.201+				From miscellaneous causes on the surface,	5	.2056+
Drivers,	5	.205+						
Supply men,	1	.201+						
	89	100		89	100		89	100

TABLE OF VENTILATION—Showing the method of ventilating, revolution and diameter of fans, quantity of air in circulation, Number of splits and the number of men employed in each split in the several collieries as reported for the month of November, 1901.

Number.	Names of Collieries.	How ventilation is produced.	Revolutions of fan per minute.	Diameter of fan in feet.	Number of Cubic Feet of Air Measured at— Inlet.	Face of gangway.	Outlet.	Number of splits.	Number of Men Employed in Each Split. First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.
1	Hazleton No. 1,	Fan,	72	16	62,652	8,070	64,792	7	56	16	39	6	13	10	14
2	Hazleton No. 3,	Fan,	70	16	87,920	37,455	47,990	6	4	28	24	29	16	6	....
3	Hazleton No. 5,	Fan,	60	16	65,600	60,050	67.000	7	33	29	45	31	29	29	32
4	Hazleton No. 8,	Fan,	62	20	89,268	23,940	95,643	7	10	33	20	8	15	19	56
5	Hazleton shaft No. 40,	Fan,	60	16	44,360	5,645	48,965	5	65	19	9	27	23	....	....
6	Spring Brook No. 1,	Fan,	70	16	44,000	26,135	52,000	6	20	8	9	10	24	10	....
7	Spring Brook No. 2,	Fan,	50	20	33,000	30,300	42,000	4	12	17	7	12	....	....	....
8	Drifton No. 1,	Fan,	38	24	35,000	28,000	38,000	3	40	20	10	....	....	....	....
9	Drifton No. 2,	Fan,	68	20	36,480	10,100	39,500	4	30	22	39	25	....	....	....
10	Eckley No. 1,	Natural,	....	....	7,000	800	7,400	1	11	....	....	....	....	....	....
11	Eckley No. 6,	Natural,	....	....	30,000	5,000	32,000	2	8	....	....	....	....	....	....
12	Eckley, Buck Mountain,	Fan,	60	16	33,000	26,800	35,000	4	17	5	3	21	....	....	....
13	Eckley slope No. 10,	Natural,	....	....	38,000	25,000	39,100	4	3	8	17	16	....	....	....
14	Stockton,	Natural,	....	....	18,200	2,750	22,920	2	22	50	....	....	....	....	....
15	Beaver Meadow No. 2,	Natural,	....	....	9,300	5,400	18,000	3	14	26	17	....	....	....	....
16	Beaver Meadow No. 4,	Fan,	100	12	26,850	18,510	29,040	2	44	38	....	....	....	....	....
17	Tomhicken,	Furnace,	....	....	16,360	4,800	16,575	2	13	8	....	....	....	....	....
18	Derringer,	Fan,	90	20	52,980	32,980	53,040	7	12	9	10	21	39	9	6
19	Gowan Nos. 1 and 3,	Fan,	110	18	56,700	30,700	63,900	5	14	5	38	8	4	....	....
20	Gowan No. 4,	Fan,	95	20	31,430	20,020	34,830	7	34	15	3	15	5	11	4
21	Nesquehoning colliery No. 1, shaft No. 1,	Fan,	49	24	91,858	48,924	105,780	5	40	8	10	15	2	....	....
22	Nesquehoning colliery No. 1, tunnel No. 1,	Fan,	84 69	21 16	40,231	25,130	53,760	7	23	12	13	21	4	14	....
23	Nesquehoning colliery No. 1, slope No. 3,	Fan,	110	16	12,500	9,000	32,000	3	10	18	....	....	....	....	....
24	Lansford No. 4,	Fan,	70	24	58,000	29,000	60,121	3	196	36	....	....	....	....	....
25	Lansford No. 5,	Fan,	62	24	82,400	75,000	86,160	3	106	19	....	....	....	....	....
26	Lansford No. 6,	Fan,	110	21	55,930	36,600	58,860	4	22	32	21	35	....	....	....
27	Lansford No. 9,	Fan,	60	16	53,246	36,350	62,500	2	33	36	....	....	....	....	....

28	Jeddo No. 4,	Fan,	75	24	59,200	42,256	70,410	7	22	18	38	36	18	30	20
29	Highland No. 2,	Fan,	70	16	42,000	37,300	47,500	6	17	24	40	40	22	52	35
30	Highland No. 5,	Fan,	80	16	83,000	59,600	84,400	7	53	31	31	29	102	79	82
31	Ebervale No. 1,	Fan,	100	10	27,000	19,000	31,000	3	24	42	32	....	....	....	....
32	Ebervale No. 3,	Fan,	100	10	25,000	22,000	35,000	2	75	16	....	....	....	....	....
33	Lattimer No. 1 and 2,	Fan,	75	16	36,500	4,010	38,000	3	7	14	21	....	....	....	....
34	Harwood No. 4,	Fan,	72	16	44,000	19,000	45,000	4	39	30	30	22	....	....	....
35	Harwood No. 5,	Fan,	72	16	22,000	11,000	23,000	3	33	49	45	....	....	....	....
36	East Crystal Ridge,	Fan,	60	16	26,000	8,900	27,600	1	46	....	....	....	....	....	....
37	Tresckow No. 16,	Fan,	90	12	70,500	22,000	72,000	2	20	20	....	....	....	....	....
38	Milnesville,	Natural,	....	....	23,398	3,722	28,618	4	24	24	22	24	....	....	....
39	Beaver Brook No. 10,	Fan,	70	16	42,500	27,000	50,000	4	45	15	29	49	....	....	....
40	Beaver Brook No. 11,	Fan,	65	16	26,500	18,500	32,500	3	22	27	19	....	....	....	....
41	Coleraine,	Fan,	70	16	34,960	30,670	35,460	3	36	47	45	....	....	....	....
42	Evans colliery,	Fan,	65	16	25,000	19,221	29,232	4	30	40	32	33	....	....	....
43	Sandy Run,	Fan,	80	16	18,000	9,560	22,000	4	20	13	10	25	....	....	....
44	Upper Lehigh No. 5,	Fan,	100	16	20,000	8,320	23,624	2	20	15	....	....	....	....	....
45	Upper Lehigh No. 9,	Natural,	....	....	12,322	8,000	21,224	3	12	10	8	....	....	....	....
46	Hazle Brook No. 4,	Natural,	....	....	8,500	4,200	9,000	2	8	10	....	....	....	....	....
47	Hazle Brook No. 5,	Natural,	....	....	26,500	18,000	28,764	4	16	12	10	8	....	....	....
48	Hazle Brook No. 6,	Natural,	....	....	12,111	7,500	15,280	3	6	8	4	....	....	....	....
49	Cranberry No. 4,	Fan,	70	16	41,000	25,243	54,065	4	15	20	20	22	....	....	....
50	Cranberry No. 5,	Fan,	68	16	35,324	29,116	39,450	4	18	22	22	20	....	....	....
51	Cranberry No. 1-S.,	Fan,	75	16	60,213	47,525	68,312	7	55	32	33	28	10	80	75
52	Cranberry No. 1-N.,	Fan,	73	16	58,100	41,251	60,500	7	20	22	23	15	25	20	21

Mine Improvements.

The following improvements were made at the several collieries of the district during the year 1901.

Coxe Brothers & Co., Incorporated.

Drifton Collieries.—At Drifton slope No. 1, or rather a continuation of Drifton slope No. 1 basin, extensive diamond drill borings have been made to prove the Mammoth vein in its connection with the Lattimer basin. The territory was divided into three sections, and contracts to strip were let to T. A. Gillespie Company, New York; Cuyle Brothers, Hazleton, and Thomas Crawford, Lock Haven. The aggregate amount of material to be moved will be about two and one-half million cubic yards, by which one and three-quarter millions tons of Mammoth vein coal will be made available for mining. While it was first supposed that the Drifton basin is a continuance, or rather a Mammoth basin connected with the Lattimer Mammoth vein, it was found that the Lattimer basin spoons at about three thousand feet from the Lattimer land line, and another basin sets in towards the north, which in its general strike lays north of Lattimer and Drifton. The Buck Mountain basin continues for the whole distance, but a cross-axis cuts off the No. 1 basin and lets the No. 2 basin continue as the principal basin.

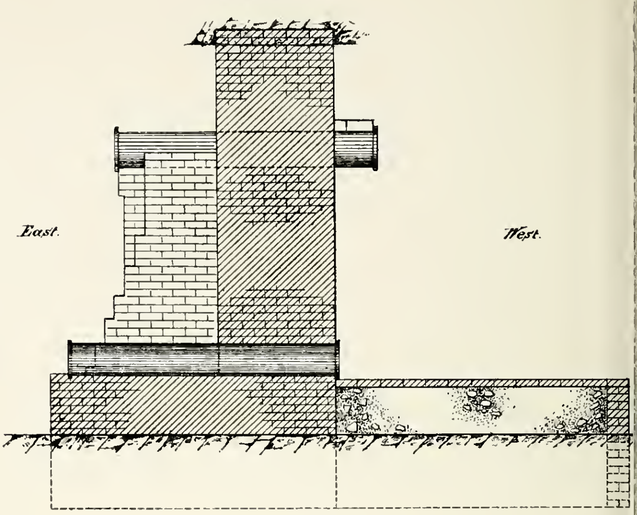
No. 2 Buck Mountain gangways approach the Lattimer land line within 1,800 feet, showing a regular widening of the basin and the tendency to open out into the Lattimer Southern basin the indications of which have already appeared in some breasts driven to the south from the west gangway.

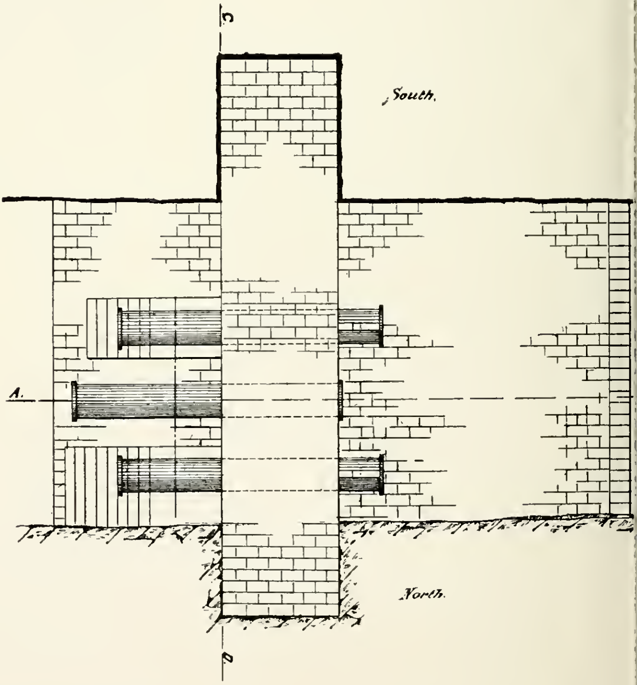
Eckley, Buck Mountain Collieries.—Nothing new developed and the principal opening work consists in strippings which are contracted for to Cuyle Brothers of Hazleton and Dick & Co., of Hazleton.

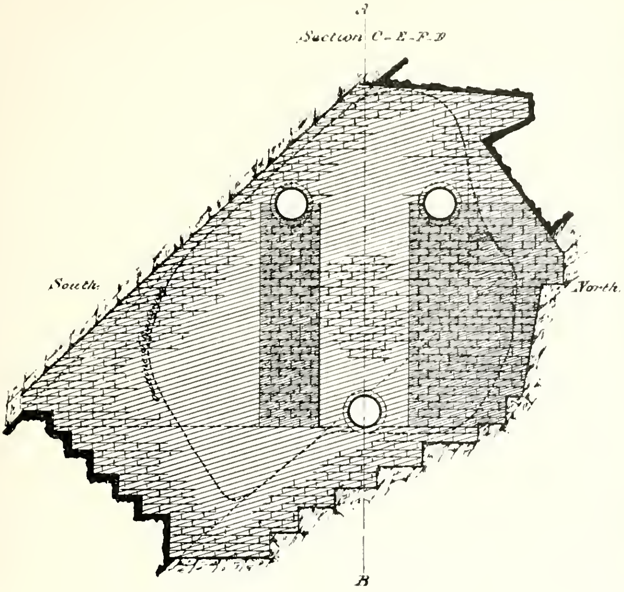
Stockton.—The operation of this breaker was discontinued in May on account of the serious interference of water accumulating in the old Stockton workings. An attempt had been made to sink in the Wharton to lower levels, but as mentioned in last year's report, even the small opening of a sinking slope disturbed the overlying strata to such an extent that this company would not take the risk of continuing workings below present levels for fear of the intervening strata breaking, and that a disaster would possibly be the consequence of it. No robbing is done in the Wharton vein below the water level in the old Stockton workings, therefore we feel perfectly safe in continuing the present system of mining with the water level above us, but we should not take the risk of going to lower levels or weakening the ground by robbing.

The coal mined at Stockton at present is taken on D. S. & S. R. R. cars to Beaver Meadow breaker for preparation.

Section A.-B.







Brick Dam

erected

in North West Wharton Gangway—

Bearer Meadow Slope No. 2.

Coxe Bro & Co. Inc.

Scale ¼"=1ft.

Edgar Kudlich
Mining Engineer

Beaver Meadow Colliery.—The North Temperance strippings have been completed by Crawford & Dugan. The extension of No. 8 strippings was completed by Cuyle Brothers. The Greenfield strippings are continued with two shovels under contract with Cuyle Brothers.

A slight fire was discovered in the old slope, Nos. 2 and 3 workings which has been abandoned since the sixties. The fire apparently started through a brush fire taking hold of stumps, and as the covering at that spot does not exceed from eighteen to twenty inches of soil, the fire through the roots was started in the coal. It was easily gotten under control by simply digging it out, together with a liberal application of water so that material was cooled off sufficiently to be handled.

Considerable trouble had been experienced in the autumn on account of the unparalleled influx of water, which not only drowned Beaver Meadow, but also the adjoining collieries to such an extent that the water rose at Coleraine within four feet of the Beaver Meadow working level. Jeanesville being drowned and pumping abandoned, made the condition very precarious, because the pillar between Coleraine and Jeanesville is an unknown quantity, it therefore was decided to erect a dam in the gangway through which a connection is made with an intrusion from the Coleraine workings, and sketch of the dam is attached to the report. Fifteen thousand bricks and thirty-two barrels of cement were used in construction.

The Beaver Meadow drainage tunnel, representing a total distance of 5,486½ feet was connected on January 2, 1902, and has been completed. This whole tunnel work consists of 600 feet of open cut as approach, about 550 feet of drift, double timbered and the balance rock. Rock appears favorable and requires no timber. This tunnel at present drains slope No. 4 basin, but it is contemplated to continue the system of drainage from Slope No. 4 into Slope No. 2, which will practically drain the Beaver Meadow property. An extension of the drainage system to Coleraine or Evans colliery is not contemplated on account of the difficulty in carrying an additional amount of water through workings which are still in operation, which would be the case by running Coleraine water into Beaver Meadow, Slope No. 2, or eventually Slope No. 4.

Derringer Gowen Collieries.—The air compressors mentioned in last year's report have been put in service and are used at present for hoisting and pumping in the sinking slope developing the bottom of the Buck Bountain basin between Deringer and Gowen No. 4. An air motor has ben received to handle coal on upper levels, but the pipes have not been installed yet. In Gowen Nos. 1 and 3 the plane workings are extended in the Wharton vein, and Big vein is opened by chutes being driven through the intervening rock from the Wharton vein.

The disastrous floods of 1901 affected the Derringer colliery only for any length of time. Drifton, Eckley, Stockton, Beaver Meadow and Gowen were able to resume operations as soon as railroad communication was opened up.

G. B. Markle & Co.

Jeddo No. 4.—Two Shaker screens installed.

One 250 H. P. Babcock & Wilcox boiler added to plant.

One 100 H. P. Erie City boiler removed.

One 2,000 H. P. Warren Webster & Co., heater installed in lieu of one 1,250 H. P. heater of same manufacture removed.

Four Green Ridge pickers added to screen room.

Pneumatic pumping system installed at water works on south side.

Tunnel C driven from Wharton to Wharton through the anticlinical, bottom of No. 4, a distance of 210 feet.

Tunnel D driven from Mammoth vein to Wharton a distance of 200 feet, together with plane K, connecting tunnels C and D.

Plane J driven in east send second basin Wharton.

Single track slope sunk in Wharton vein from Oakdale first lift to bottom under Mammoth vein slope. Gangway driven 100 feet west and at this point a tunnel turned to the north will eventually be connected with the drainage system.

H. K. Porter Company 10″x14″ locomotive added to plant. Fifty-six inch hydraulic wheel press added to machine shop and smith shop addition erected.

Highland No. 5.—Slate conveyor system has been abandoned; slate is now hauled to banks by locomotive.

Compressed air haulage system increased by a three inch pipe line extended through tunnel G to second lift Pink Ash gangway, a distance of about 2,250 feet.

A third three-stage Norwalk Compressor 28x30 is being installed.

Three Shaker screens have been added to plant.

45 Kilowat Westinghouse dynamo and an Ames sixty-five H. P. engine added to the electric light plant.

Two 250 H. P. B. & W. boilers installed.

One set steam boar rolls, 30x36 added to plant.

Manway to Pink Ash workings near Cross Creek canal has been closed up, and a new man-way opened near the eastern end of Japan village.

Goyne duplex 12″x7″x12″ circulating pump for compressors installed in lieu of the Jeanesville 8″x5″x8″ pump removed.

Additions have been made to boiler house, compressor house and electric light station to accommodate additions to plants.

Highland No. 2.—Two Green Ridge pickers installed.

Fan blast engine and fan added to blacksmith shop.

New three inch wrought iron water pipe line laid from Highland No. 1 to Highland No. 2.

Slope and airway sunk in over-lying vein western end, 310 feet.

One 100 H. P. Erie City boiler and a pair of 14″x18″ second motion Stroh engines installed.

One No. 12 Cameron pump with Goyne water end placed in first lift Slope A, Highland No. 2 and fourten inch line column carried to main bottom.

Ebervale.—A sixteen feet Guibal fan manufactured by the Vulcan Iron Works installed at Ebervale No. 3, in place of the ten feet Crawford & McCrimmon fan removed.

Blast fan and engine added to blacksmith shop.

Surgical rooms with appliances have been installed at Highland No. 1, No. 2, No. 5, Jeddo No. 4, and Ebervale Nos. 1 and 3, in accordance with law.

Lehigh Valley Coal Company.

Hazleton No. 1. Colliery.—Sixteen foot fan transferred from the Diamond to Buck Mountain vein on south side of basin at old No. 6.

Location of the L. V. R. R. No. 1 colliery branch moved 1,000 feet to the westward, thus releasing the block of Mammoth tied up under the old Horse Shoe curve.

Hazleton No. 2 Colliery.—The Lehigh Valley Coal Company continued silting at intervals during the past year, thus confining the fire to the former limits.

Hazleton No. 3 Colliery.—On the third lift a tunnel was driven from the Wharton to Buck Mountain vein and another from Primrose to the Orchard vein.

The third lift main tunnel south was extended from the Orchard to the Diamond vein.

Second outlet was completed from Diamond to surface.

The head of No. 3 slope was changed from a back switch to a landing turnout.

The Hazleton No. 3 colliery branch, L. V. R. R. was also changed, thus releasing a large body of coal for stripping.

Hazleton No. 5 Colliery.—A second outlet was completed from third to second lift on Buck Mountain vein and from the Buck Mountain to the surface.

Hazleton Shaft Colliery.—A sixteen' foot reversible fan was installed on the Primrose vein outlet, south side of basin.

A twenty foot reversible fan installed on the Buck Mountain outlet on the north side of basin.

A tunnel was driven from the Primrose to Diamond vein, third lift.

A tunnel was driven from Mammoth to Primrose, second lift. No. 2 district.

A six inch rope hole was completed from the surface to head of No. 2 Wharton plane.

Spring Brook Colliery.—A tunnel was completed from Buck Mountain to Lykens Valley vein fourth lift, No. 2 district. Also tunnel on same level southward from the Buck Mountain to the overlap of said vein.

A tunnel was driven from the Wharton to the Buck Mountain vein, No. 1 basin.

A tunnel is also being driven from the Buck Mountain to Lykens Valley in the bottom of the basin.

The main portion of the breaker was rebuilt.

Spring Mountain Colliery.—The breaker was operated as a washery until May 1, 1901. The banks having then been practically used up, operations were suspended, since which time the work has been confined to pumping.

Examination of Applicants for Mine Foreman and Assistant Mine Foreman Certificates.

The annual examination of applicants for certificates of qualification for mine foreman and assistant mine foreman was held in the Pine Street School building at Hazleton, on June 27th and 28th, 1901.

The board of examiners were W. H. Davis, Inspector of Mines; A. W. Drake, Superintendent; Patrick Smith and George McGee, miners.

The following named persons, having passed a satisfactory examination, were recommended and received certificates.

Mine Foreman.

Ludwig Linderman, Gowen.
Thomas Newton, Jeddo.
James Renshaw, Jeddo.
John A. Reeves, Lansford.
William Derbey, Lansford.
Neale Gallagher, Sandy Run.
Henry Hawk, Hazleton.
Frank Breame, Jeanesville.

Assistant Foreman.

John Mitchell, Lansford.
George Aiken, Lansford.

William H. Philips, Hazleton.
John McCann, Sandy Run.
Charles Yost, Freeland.
John Quigley, Jeddo.

Remarks on Fatal Accidents.

In reviewing these casualties I shall endeavor to give a clear description of each accident, and the causes leading up to it, showing how it might have been averted, and placing the responsibility in each case. This may be contrary to the usual custom, but it is done with the hope that a careful perusal of these will be made by the employes in and about the mines, which will cause them to resolve against taking unnecessary risks in future, for in my opinion a repetition of such fatalities can only be averted by the miners themselves.

During the year ending December 31, 1901, sixty persons lost their lives in and about the mines of the district from various causes; forty-eight and one-third per cent. by falls of coal, clod and rock; ten per cent. by premature blasts and explosions; twenty-five per cent. by locomotives, mine and railroad cars, and sixteen and two-third per cent. were due to miscellaneous causes. Strange to say that those who should have the greatest experience were the most unfortunate this year about the mines. Of these sad occurrences, the miners and miners' laborers were the most reckless in running into danger, and represent over seventy-one per cent. of the total number of accidents. The fact is evident that the record of fatalities this year surpasses any previous record, in the history of mining in this district. Yet when we take into consideration the sort of men that are employed in the mines of this region it is fortunate that the record of accidents was not double the number.

When it is considered that of the sixteen thousand men and boys employed, sixty per cent. are foreigners, and that fifty per cent, of this number are unable to speak, or even understand the English language, should explain why so many were killed and injured about the mines of this district in the past year. It is a well known fact that with this class of miners, when they are cautioned by the mine foreman or even by their fellow miners, to find them disregard the warning and walk directly into the danger, with the result that they are either injured or killed, which is due to their inability to properly understand the warning given them.

The responsibility for the deplorable condition of affairs existing in this region to-day, rests entirely with the miners, and the act of Assembly of 1897, which provides for the examination of persons seeking employment as miners in the Anthracite coal region, and to prevent the employment of incompetent persons as miners in the

Anthracite coal mines. This act is generally conceded to have done more than any other cause to drive from the region the experienced miners of a few years ago, and to burden the district with the ignorant and unskilled workmen that are to be found in the mines to-day, who have contributed largely to the increased number of accidents, which a careful perusal of the annual records will prove conclusively.

An examination of the tables contained in this report will show that if the sixty lives sacrificed in 1901, sixty-eight and one-third per cent. were of this class of workmen. The responsibility, in the opinion of the writer, rests with the miners themselves, because under the act, there have been nine miners appointed periodically by the county courts to sit as a miners' examining board to qualify persons seeking employment as miners throughout this Commonwealth. How well they have taken care of the interests of their fellow miners, by complying with the act of Assembly or the mandates of the court by which they were appointed, the prevailing conditions demonstrate beyond a question of doubt.

The step taken by the Chief of the Bureau of Mines in causing to be printed for distribution, copies of the Anthracite mine law in the several languages, is to be commended, and in the opinion of the writer will beyond doubt have a great tendency to reduce these sad occurrences in the district.

No. 1. Frank Folwain, a miner employed by C. M. Dodson & Co., No. 11 slope workings in Beaver Brook, was instantly killed on the 11th of January, at face of breast in the east gangway. The first man upon the scene was John King, a company hand. He testified that Folwain was engaged working on the bottom bench. "When I visited his breast five minutes prior to the accident, I cautioned him about the bad condition of the top, which he admitted was bad, and said he would take it down." The assistant foreman also notified him to take the clod down, which he promised to do, but instead he continued to mine under the bony bench, unheeding the warning of his fellow workmen and disobeying the orders of the foreman, until the top fell, with the result as stated. An examination of the breast, proved that had the victim taken the proper precautions or even obeyed the orders given him to take the bench down, this accident could have been averted, therefore I do not hesitate to say that he was responsible.

No. 2. Michael Masholock, a miner employed in breast No. 26, West Buck Mountain, operated by the Lehigh Valley Coal Company at Hazleton, was fatally injured by a fall of rock on January 12, and died in two hours. The investigation proved the victim to have been a careful, experienced miner. At the time of the accident, he was engaged putting in props, but between the props that he was placing for conveying a chute up the centre of breast, there was a sulphur ball running across which he considered safe, after properly sounding it, and he went on preparing to place the second prop, when without warning the rock fell upon him, inflicting injuries with the aforesaid result. Under the conditions, the accident was unavoidable.

No. 3. Fred. Guiderjahn, a miner employed at East Crystal Ridge colliery, operated by A. Pardee & Co., was fatally injured on January 12, and died while being taken to the Hazleton Hospital. There was no person on the scene when the accident occurred, but from a careful examination of the breast, which was in the Parlor vein, together with the testimony of those who went to his rescue, it appeared that Guiderjahn had been barring down coal at face of breast, when a greater rush of coal came than he expected, knocking him down and inflicting internal injuries, resulting as stated. I think this accident could have been averted by the victim himself, but his methods were very impractical.

No. 4. Alex Mickaloski, a miner employed in Hazleton No. 1 colliery, operated by the Lehigh Valley Coal Company, was fatally injured by an explosion of powder on January 18, 1901, and died in a few hours. According to the testimony of the victim himself, he was engaged in thawing a stick of dynamite by the flame of his naked lamp, when the paper wrapper encasing the powder ignited. He threw it out of his hand, and unfortunately for him, it landed on a full keg of powder, exploding it with the result as stated. This accident was due to reckless methods of thawing powder, and could have been averted by the use of a properly devised thawing kettle.

No. 5. John Hydock, laborer, employed in No. 4 colliery, was instantly killed on January 29. He, with his miner and another laborer had made an examination of the working places where they were engaged laying track across an abandoned breast for the purpose of continuing the gangway through the pillar, with a view to final robbing. The three men considered the place safe, and Hydock commenced to spike the rail near the face, assisted by the miner, when suddenly a flake of rock fell from the top, pinning him to the ground with the aforesaid result. A careful examination of the place showed that the accident was unavoidable.

No. 6. Richard Williams, a patcher employed at No. 5 colliery, Upper Lehigh, was fatally injured on February 4, and removed to the Hazleton Hospital, where he died February 27, 1901.

Williams was coupling a car on the gangway, according to his own testimony, when something struck him on the head, fracturing his skull. John O'Neil, the team driver, testified that on taking a car out from the dip gangway he discovered a rail turned out. "I stepped off the car and left the team in charge of my patcher. After repairing the track, I returned to the team and found my patcher in a sitting position and bleeding. I carried him to the bottom of the slope, but he did not speak. I called to see him at his home that evening, when he told me that he was about to couple the cars when something struck him, but I did not place much confidence in his story."

An examination of the scene of the accident, in addition to the testimony, proved conclusively that Williams was injured after coupling the car, by having been squeezed between the side of the car on the gangway and the mule. This accident could have been averted by ordinary precaution on the part of the victim.

No. 7. John Vasiliko, hitcher, employed at No. 2 Rock plane, Coleraine colliery, was instantly killed on February 4. He had sent a car up the plane, when the remaining cars on the siding moved by gravity into the foot of the plane. He attempted to uncouple the first car, preparatory to sending it up the plane, and while thus engaged he was crushed by the coming together of the cars. There is no doubt in my mind that this was a common practice of the victim, which cost him his life.

No. 8. Charles Howis, jig runner, employed on the Stockton breaker, was fatally injured, and died at the Hazleton Hospital. He had left his place of work and was walking through the breaker when he saw that the belt operating the drag line had slipped off, and reported the matter to Andrew Bartish, foreman in charge of the breaker machinery, who told the boy that he knew it was off, and that he, Howis, should leave it alone, but he attempted to replace the belt when his clothing came in contact with the main driving shaft. He had been carried around by the revolving shaft for some time before he was discovered and the machinery stopped. A careful examination of the place, together with the testimony of witnesses, showed this place to have been well protected, and that he had no business whatever with the belt, as it required two or three men to replace it.

No. 9. Andrew Sochrell, dumpman, employed on the Beaver Meadow No. 2 stripping, was instantly killed on February 7. He was about to dump a car of clay on the bank, and while engaged in removing the pin on the north side of the car, the pin on the south side broke, causing the loaded box to fall upon him, crushing his head against the truck, resulting in instant death. The investigation showed this accident to have been unavoidable.

No. 10. Mike Bodinskey, laborer, employed at Jeddo No. 4 colliery, was killed on February 11. He was engaged with the timbermen receiving timber on the gangway, when a driver came along with a trip of cars for the gangway and breast men. Bodinskey, with the other timbermen, stepped between the gangway legs to allow the trip to pass, and while there the first car of the trip came in contact with an improperly braced leg, which fell against the victim, forcing him against the car and crushing his head between the car and gangway timber, resulting as stated. The examination, together with the testimony of the witnesses, showed that the miner in charge of the timbermen was responsible for this accident, in permitting the men in his charge to stand in an unsafe position while the trip was passing, also for permitting the driver to advance with the trip before he had properly secured the timber.

No. 11. Patrick Gallagher, motor runner, employed at Highland No. 5, was instantly killed by being caught between a derailed motor and a pillar of coal on February 11. He was taking a trip of cars from one siding to another on a down grade, and in some manner lost control of the motor. A careful examination of the locality, together with the testimony of witnesses, showed the motor to have been running at a very high rate of speed. The motor had left the track and ran fifty-one feet before it ran into the coal rib of gangway, where the cars telescoped, and the victim was found dead between the derailed motor and rib of gangway. Albert Smith, patcher, was on the rear end of the trip, and thought the trip was running at an extraordinary high rate of speed. He called the engineer, but received no response; he then walked forward along the trip to the motor, wher he found the motor runner lying dead between the motor and coal rib of gangway across the track. This was an accident due entirely to reckless running of the motor, for which the victim sacrificed his life as the penalty of such recklessness. The Mine Inspector, to avoid any further possibility of accidents from this cause, directed shoes to be used to control the speed of trips in the future.

No. 12. George Feddor, miner, employed at the Beaver Brook colliery, was instantly killed on February 21. He had broken through from the gangway into the face of breast in the Lykens Valley vein for the purpose of improving the ventilation. He had been told by the foreman to take the bony coal down, but instead he fired a shot on the rib to enlarge the hole, and while working out the loose coal after the shot, he was caught beneath a fall of bony coal. An examination of the place, together with the testimony of the men, showed that the victim alone was responsible for the accident, as he should have placed temporary props while undermining the bony bench. This he neglected to do, after having been ordered to do so by the foreman, which neglect cost him his life.

No. 13. Michael Lukash, a laborer, employed at East Crystal Ridge colliery, was crushed to death between a rock and gangway collar on February 23. He, with his miner, John Costick and his fellow laborer, George Kemmil, were engaged in reopening a gangway through a cave of rocks, which were within two feet of the gangway collar, and at a height of two feet above the rail a large rock protruded. Lukash was seated on the rock, drilling a hole in it with a jumper. He was turning the steel while George Kemmil was striking for him, when slowly the rock was moving downward. Lukash, feeling confident that there was no danger, continued drilling, until suddenly, by the last movement of the stone, he was pinned by the rock against the gangway collar with the result as stated. According to the testimony of the witnesses, this accident could have been averted by ordinary precautions on the part of the victim.

No. 14. John Bongo, a miner employed at Hazleton shaft colliery, was instantly killed on March 2. He was working in Breast No. 15, East Wharton gangway, second level. He knew the top was bad, for he had been told by the foreman the morning previous to the accident that he should do no blasting, and should secure the top with props before doing any more work at the face of the breast, but according to the testimony of his laborer, who was the only witness to the accident, Bongo, unheeding the order of the foreman, upon reaching the breast commenced to drill a hole in the face, telling his laborer that he would put the props in place after he had fired the shot. But he had already neglected propping too long, for while he was engaged in drilling the hole the rock fell, with the result as stated.

An examination of the place, together with the testimony of witnesses, proved beyond question that the victim, by his failure to properly secure the top with props, and in disobeying the order of the foreman was alone responsible.

No. 15. Martin Shefanic, a miner, employed at Hazleton shaft colliery, Slope No. 3, was fatally injured on March 2, and died while being taken to his home. He and his partner, August Winters, were working in the second lift, No. 3, Primrose, west gangway. They had drilled a hole and tamped it, and Winters drew the needle and threw it down the schute, expecting his partner to pick it up and place it out of the way. But before his partner discovered the needle, Shefanic had occasion to go down the schute for something on the gangway, and came in contact with the needle, the point of which penetrated his stomach with the aforesaid result. This accident was due to the carelessness of both the victim and his partner, and while this is a common practice with some miners, it should be a lesson to all miners to give it up.

No. 16. Andrew Podensin, a repairman employed at Hazleton No. 1 colliery, was instantly killed on March 2. He had been making repairs to the track at the foot of the slope and was gathering his tools when the car was being hoisted, but by the breaking of the chain, the car came back. The bottomman gave the alarm, but instead of Podesin going to a place of safety with the bottom-man, he went back for his tools, and in making his escape he was overtaken by the runaway car, which crushed him against the timber with the above result. The investigation showed that the ropes and chain on the slope were examined daily by John Schugard, the colliery blacksmith, who had been doing the work for the past six years. He estified that he had examined the west side chain at noon. The east chain was at the bottom, and he considered it safe. "The assistant foreman, Smith, testified that he rode upon the two cars that had been wrecked, before noon, and found a broken link in the chain. I renewed, or replaced the chain with a heavier one which I considered perfectly safe, and strange to say it broke with the second car. I cannot understand it." The first wreck was caused by the breaking of the hitching staple when the car was going over the apex at the top of slope, when the car went back to the bottom of the slope, wrecking two cars. This wreck was cleared up and the second car was being hoisted, when the chain broke, the car going back to the bottom, with the aforesaid result. An examination of the place together with the testimony of the witnesses, showed the accident to have been unavoidable.

No. 17. John Zcetzewicz, a laborer employed at Cranberry No. 1 colliery, was almost instantly killed on March 6. He and his miner, John Ratchkiss, were loading a buggy about 15 minutes after firing a shot, when a sharp edged piece of top rock fell, striking Zcetzewicz on the head and arm with the aforesaid result. An examination of the place, and the testimony, proved that the victim had considered the rock unsafe, and in fact had tried to bar it down, but left it, to load the buggy, which was a mistake on the part of the miner, who, in my opinion was in a great measure responsible for the accident by which the laborer lost his life.

No. 18. John Henry Richards, locomotive fireman employed at Nesquehoning shaft colliery, was fatally injured on March 5, and died March 22, at St. Luke's Hospital, Bethlehem. He was walking along the gangway in advance of the locomotive strewing sand on the rails. The engineer, who thought he was still riding on the engine, sounded the whistle and moved in the gangway while Richards was in a stooping position. He was knocked down, the wheels passing over both legs. A careful investigation of this accident showed that the engineer had properly signalled before moving in the gangway, therefore could not be considered in any way responsible, but the accident was entirely due to the victim having been hard of hearing, which was not known to the foreman until after the accident, which therefore might be considered as unavoidable.

No. 19. Jacob Doman, miner, employed in No. 5 slope, East Crystal Ridge colliery, was instantly killed on March 13. He had come out to the bottom of No. 5 slope, having finished his day's work, when the driver told him that there was another empty car for him in the trip that was about to be taken in, so he jumped into the rear car, and rode along the gangway and came in contact with a prop, striking his head with such force as to break his neck. His hat and lamp were picked up in the gangway, while his dead body was found in the car by the driver upon reaching the siding. Upon an examination of the place, it was evident that Doman while standing in the moving car, was caught by the prop with the aforesaid result.

No. 20. Mike Pasdon, a laborer, employed at Hazleton shaft No. 40, was instantly killed on April 2. He and the miner had drilled a hole in the top bench, ready to fire, when the miner commenced to drill a hole in the bottom at face of breast, and while preparing to tamp the hole, the top bench fell upon the laborer with the aforesaid result. At the investigation it was shown that the foreman while making a tour of the mine on the day before the accident ordered the miner, Michael Romans, to secure the top bench with props, or blast it down. This order was disobeyed, which made the miner responsible for the death of his laborer.

Nos. 21 and 22. Andrew Bore, miner, and John Salko, laborer, were employed at Evans colliery, and were instantly killed by a premature blast on April 11. They were engaged on the night shift, and were the only men, outside the driver, working in the slope on that night. At 9.30 P. M., John Gordon, the driver, while going to the face of gangway to change the car, was horrified to find the lifeless bodies of the men in the gangway. He immediately reported to the pump-man, and the foreman, who brought men with him and removed bodies of the unfortunate men to their homes. A careful examination of the place proved beyond any doubt that the men were tamping a charge of dynamite in a hole in the bottom rock with a steel bar, when the charge exploded, literally blowing them to atoms. These men sacrificed their lives by their unlawful and reckless method.

No. 23. Eugene Gabour, brattice builder, employed at Hazleton shaft, No. 40 colliery, Slope No. 5, was fatally injured on April 11, and died at the Hazleton Hospital. After completing work, he sat down on the bottom of platform to eat his dinner, and while thus engaged, the miner at the face of the breast gave the alarm that he was about to fire a shot. Gabour remained on the platform, and when the shot was fired a piece of coal was thrown through the brattice, striking him on the head, fracturing his skull. A careful examination of the place, together with the testimony of those first to appear on the scene, it was evident that the victim was alone responsible, for he had no business on the platform after completing the brattice, and had he withdrawn when the miner told him he was about to fire, the accident would not have occurred.

No. 24. George Pado, slate loader, employed at the Coleraine breaker, was fatally injured on April 13, and died at the Hazleton Hospital.

He was engaged in oiling a slate truck under the breaker, when the loaded trucks were run down from another track, bumping the truck he was oiling and pinning his head and chest between the truck and the foundation wall of the breaker, causing such injury that he died shortly after in the hospital. A careful investigation of this accident showed that it was the regular practice before commencing to oil the cars, for one loader, to notify the other one, but the victim had neglected doing so on this particular occasion, which neglect cost him his life.

No. 25. Bastita Clauser, miner, employed at Gowan Nos. 1 and 3 slope, was fataly injured on April 13. He was engaged in East Creek tunnel robbing the gangway and driving breast No. 128 on the south side. The breast being flat, the road followed into it for about thirty feet, the seam or vein being about twenty-five feet thick where he was loading the coal. While engaged loading a car, a piece of rock fell, striking him on the head, with the aforesaid result.

A careful examination of the place, together with the testimony, proved the accident to have been unavoidable.

No. 26. John McGarvey, slate picker, employed at Spring Mountain washery No. 1, was fatally injured on April 18. He, with other boys, after quitting work for the day, ran out of the breaker. McGarvey was the first to reach the foot of the stairs. He continued running and attempted to cross the slate bank tracks, where he was run down by a car coming in from the bank, fracturing his leg and injuring him internally.

An examination of the place, together with the testimony of the men and boys who were eye witnesses, showed that every precaution had been taken by the man running the car into the breaker, by giving the usual alarm, but McGarvey paid no attention to it, and kept running until he was knocked down by the car. According to the investigation, this accident could have been averted had the victim used ordinary precaution or had given attention to the warning given him by the car runner.

No. 27. John Shewick, miner, employed at Hazleton shaft colliery, Slope No. 3, was instantly killed on April 29. He was blasting a rock skip off the lower side of gangway preparatory to making a siding, and had fired several shots in the coal, undermining the top rock. According to the testimony of his laborer and brother, Mike Shewick, after firing the shot, John returned to work, assisting to load the car, without first sounding the top, and, while thus engaged a piece of the top rock fell upon him, causing instant death.

The investigation showed that the victim through his carelessness in not making the necessary examination after firing the shot, was alone responsible for the accident which cost him his life.

No. 28. James Moy, patcher, employed at Highland No. 5, was killed on July 9. He was running motor No. 3 in place of regular motorman, who was acting as patcher for him in taking a loaded trip down the incline from Plane "A." When part way down, he lost control of the motor, which ran with such speed that it became derailed at the bottom of the incline, and Moy was caught between the derailed motor and the coal rib of gangway, with the aforesaid result.

The investigation proved that the vicitm alone was responsible for the accident which cost him his life. While the cause of his inability to control the motor is not known, I can only surmise that it was due to reckless running before striking the grade.

No. 29. Ignatius Zubick, laborer, employed at No. 6 shaft colliery, Lansford, was instantly killed on July 11. He was employed in the west gangway. The miner and his laborers went into the face of the gangway, and finding, as he thought, everything safe and secure, they commenced to work. After loading two cars and firing two shots, they left the gangway. When they returned, the miner examined and trimmed after the shot, and thinking the place safe, they again commenced to work.. The laborer commenced to load the car, while the other men were engaged drilling holes, when a piece of rock fell from the top, striking the victim and injuring him as stated.

A careful examination showed that the accident was unavoidable and was due to an invisible slip. The miner had taken every precaution to make the place safe, by sounding.

No. 30. Michael Mochecotch, a miner employed at Beaver Brook colliery, was fatally injured on July 17, and died while being taken to the hospital.

He was working at face of breast in No. 10 slope, West Buck Mountain gangway, and had fired a shot in the top bench and returned to trim the top, and while thus engaged a piece of clod fell upon him. The investigation showed that the victim had neglected to take down the clod along the rib of breast, and while he was engaged in barring down the top bench, the overhanging clod fell from behind, causing the injury which cost him his life. This would not have occurred had the victim taken the precaution to either prop the clod or blast it down along the rib of breast, therefore he was alone responsible.

No. 31. Frank Harrit, outside laborer, employed at Derringer colliery, was fatally injured on July 23. He was running a car of screenings out from the breaker while a locomotive was dropping a trip of loaded cars into the drift. Harrit tried to stop the car before it should bump into the trip, and was running alongside the car, holding on to the sprag, and when the car struck the trip it swung the rear end around and caught his head between the side of the car and the cab of the locomotive, fracturing his skull, from the effects of which he died. A careful examination of the place, together with the testimony of the men, showed that this accident was due to the recklessness of the victim, in starting the car out of the branch while the trip on the main line was passing the switch, for he should not have run the car out until the locomotive on the main line had cleared the switch, therefore, he was responsible.

Nos. 32 and 33. James Kawolski, miner; George Vasloski, laborer, employed at No. 5 slope, Hazleton shaft colliery, were instantly killed on July 25, by the premature explosion of a charge of powder. The men were working at the face of East Wharton gangway on the second level. They had drilled a hole in the south side of the gangway in the bottom rock and had placed a charge in the drill hole and were tamping the hole with a steel bar, when the charge exploded, and the men were literally blown to pieces, and could be identified only by their clothing. The investigation again proved that these men recklessly threw away their lives by violating, not only the rules of the colliery, but all laws in connection with the handling of dynamite. They had been warned on several occasions by the foreman, and on this particular occasion by George Patroma, who was the first person to reach the scene after the accident.

No. 34. Thomas Meenan, driver, employed at No. 1 tunnel, colliery No. 1, Nesquehoning, Pa., was killed August 1. He was coming out the east gangway on top of plane, and in some manner fell under the trip with the aforesaid result. A careful examination of the gangway, together with the position in which the body was found, showed that the victim was evidently running beside the team when he fell backwards to the track, or south rail. According to the testimony of those first on the scene, together with the circumstances in the case, Meenan met death by falling backwards to the track while trying to jump on the moving car. This was an unavoidable accident.

No. 35. Otto Brein, miner, employed opening chutes in West Gamma gangway, Hazleton No. 1 colliery, was fatally injured on August 2, and died next day at his home.

He was standing props on high side of gangway preparatory to starting a new chute from the gangway, when a piece of top rock in the form of a sulphur ball, fell, striking the car and then toppling over upon him, squeezing him severally and causing internal injuries, which resulted as stated. A careful examination of the scene, together with the testimony of eye-witnesses, showed that the victim was a miner of many years experience. He had taken the usual precaution to sound the top, but the rock fell, inflicting such injuries as to cause death. This was unquestionably an unavoidable accident.

Nos. 36 and 37. Michael Remock, miner, and Andrew Chippie, miner. Employed at Jeddo No. 4 colliery, were instantly killed on August 6. The men had fired a shot in the pillar, and had retreated to a place of safety. They were sitting under their platform, when a fall of coal followed the shot which overloaded the platform, causing it to break down on them with the aforesaid result. The investigation showed that the platform was only a temporary or frail structure, built by the men themselves, which they considered safe. They were engaged in robbing pillars, and should have gone out of the gangway when a shot was fired. This error in judgment cost them their lives.

No. 38. Samuel Rupert, miner, employed at Gowen slope No. 4, was fatally injured by a fall of top slate on August 29. He and his partner, were working a breast. Mine Foreman Houser had been in the breast at 10 o'clock A. M., on the day of the accident, examined the top, and told both Rupert and his partner, Freas Mensinger, that they must take the slate down. Rupert admitted that the slate was loose and promised to take it down, but instead of doing so, he drilled and fired another hole in face of breast. He returned after the shot, and while talking to his partner, the slate fell upon him, causing such injury as to result in death. This accident could have been averted had the victim carried out the orders of the foreman.

No. 39. Joseph Jacquot, a miner, employed at Highland No. 5, was fatally injured on September 12, and died at his home several days later. He, with his partner, were robbing pillars. They had drilled, charged and tamped two holes, one in the bottom and the other in the top bench of Buck Mountain vein. Jacquot was alone when the accident occurred. He had withdrawn the wire from the blasting tube in the top hole and placed a squib, ready to light, when the driver came with a car, and while waiting, he walked about with a lighted lamp upon his head, and unknowingly, ignited the squib which fired the shot, resulting as stated. The investigation showed that, according to Jacquot's own statement, he did not know what had happened. He recalled drawing the wire and placing the squib, but did not light it. The conditions of the place, together with the testimony of those first to appear on the scene proved conclusively that he was alone responsible for the accident, and should not have placed the squib until he was ready to fire the shot, for by so doing, he made the accident possible.

No. 40. John Tewador, miner, employed at Beaver Brook colliery, No. 10 slope, was instantly killed on September 16. He was working a breast in the West Lykens Valley Vein, and had fired a shot in the bottom bench which failed to do its work, so he returned to the face and with a drill commenced to bar the coal left intact by the shot, and while thus engaged, a piece of the top slate fell upon him. A careful examination of the place, together with the testimony of witnesses, showed that the victim had, previous to firing the shot, tried to bar down this piece of slate. He also cautioned his laborer against standing under it, as he did not consider its safe, and in the face of these facts he deliberately went under the slate and recklessly threw away his life while attempting to bar out the coal in the bottom bench before securing the top, knowing that it was unsafe, before he fired the shot.

No. 41. Lewis Yellon, laborer, employed at the Ebervale colliery, was instantly killed by a fall of rock in a breast, on October 7. He was working with his miner, George Dornaman, in breast No. 15, Tunnel C, east gangway. An examination of the place, together with the testimony of those first to appear on the scene, showed that they had taken out a length of man-way on the west rib of breast to let the coal down. They had pushed the coal down, and the laborer was shovelling the coal back in center of breast. The miner had some business down on the gangway, so he left the laborer in the breast alone, knowing the top was dangerous, and on reaching the cross-heading, the miner in the west breast told him that he was about to fire a shot. Dornaman remained in the cross-heading, instead of withdrawing his laborer, as he should have done. After the shot was fired he heard a fall in his own breast. He hurried to the face, and found the laborer buried beneath the fallen rock. The miner was responsible for this accident.

No. 42. John Stachura, a miner, employed at Beaver Brook colliery, No. 10 slope, was fatally injured on October 11. He was engaged robbing pillars in East Buck Mountain vein, and had fired a shot in the working face of the pillar in the bottom bench, and another in the top bench. His brother, who was laboring for him, testified that he was an eye-witness to the accident, and that when they returned after firing the shot, John started barring out the bottom bench with a drill when a flake of the overhanging slate, which he knew was bad, fell upon him with the aforesaid result.

This accident could have been averted had the miner used ordinary precaution in barring down the top slate instead of attempting to take out the bottom coal.

No. 43. Metro Bublisky, a miner, employed at Evans colliery, was instantly killed by a fall of rock on October 11.

He was working in breast No. 1, East Gamma vein. He and his laborer were shoveling coal back from a cross-heading, when a rock boulder fell upon him with the aforesaid result.

According to the testimony of his laborer, Simon Houser, who was the only eye-witness to the accident, the foreman had instructed the miner to secure this piece of rock with props. He had partly done so, and commenced to take a skip off the pillar, and was engaged trimming after a shot when the rock fell upon him. A careful examination of the place showed that the rock fell out from between two slips, deceiving the miner by its sound, therefore, taking into consideration the precautionary measures taken by the miner. I am of the opinion that this was an unavoidable accident.

No. 44. Stephen Singley, inside laborer, employed at Cranberry No. 1 colliery, was fatally injured on October 15, and died at the Hazleton Hospital.

At 5.30 P. M., while waiting to enter the mine for his work on night shift, Singley took a seat in the sheltering shed of the car-hitcher at the foot of breaker-plane. In a short time Gerlach left for the slope. Before entering the shed over the plane approach, he heard the cry "Look Out!" which signalled the falling of a piece of coal or slate from the top of breaker-plane. Gerlach took refuge in the approach shed, and turning, saw Singley fall about ten feet from the hitcher's shed. The investigation showed that neither Singley nor foreman Gerlach had any business at the hitcher's shed at the time of the accident, and were, in fact, violating the colliery rules by being there.

No. 45. Peter Oleskey, a laborer, employed at Lansford No. 4 colliery, was instantly killed on October 21, by an explosion of dynamite. He was engaged working at a battery on the night shift. They had loaded all the cars, and he had completed his work, when he discovered the battery blocked by a large piece of slate. Thinking to break the rock, he placed a quantity of dynamite upon it and ignited the fuse. He retreated to a place of safety. After waiting for some time, and not hearing the shot, he concluded it had missed fire, so he returned to ascertain the cause, when the charge exploded, resulting as stated.

The investigation showed that while the victim was not a miner, he was a careful man in handling explosives, and had been doing such work at this colliery for several years. Therefore I have no hesitation in stating that this accident was unavoidable.

No. 46. Constanta Kokanski, miner, employed at Hazleton No. 1 colliery, was fatally injured on October 24, by a fall of rock. He, and his partner, were working in breast No. 34, West Buck Mountain vein. They had fired a shot, and retreated to a place of safety, remaining there for some time. They commenced to drill another hole, when the victim's partner saw a movement in the top, and gave the alarm, "Look Out!" But before Kokanski could escape, a piece of clod in bell shape, fell, crushing him against the side of the chutes, inflicting such injuries that he died at the Hazleton Hospital. From a careful examination of the place, together with the testimony of his partner and those first to appear on the scene, it was evident that they were fully aware of the fact that the top was bad, for they had spent fifteen minutes trying to bar it down, and had left it to work on the face.

The miners were responsible, for when they failed to bar down the clod, they should have taken no further chances, but have blasted it down.

No. 47. Frank Ball, a laborer, employed at Cranberry No. 1 colliery, was fatally injured on October 24, by a fall of clod. He was employed in a breast in the Parlor vein, and was shovelling coal back to his miner, when the fall occurred, inflicting such injuries as to result in death about two hours after, in the Hazleton Hospital. A careful examination of the place, together with the testimony of witnesses, proved that Ball had been cautioned by his miner, but paid no attention to the warning, thinking himself judge of his own safety, and continued working on his own method until the clod fell, resulting as stated.

No. 48. Joseph Yarasinski, a laborer employed at Harwood colliery, No. 5 slope, was fatally injured on October 28, by a fall of rock. He was employed with his miner driving a breast in the Gamma vein. John Panco, foreman, visited the breast at 9 A. M., and warned the miner, Joseph Schultz, to keep the clod down close to the face, also to tell his partner, Vosogo, to do the same. Schultz told his partner to take down the clod, and he commenced drilling a hole for that purpose, but instead of continuing the hole, he tried to bar it down, but failed. He then ordered the laborer to shovel coal back, and while he was thus engaged, the rock fell, with the aforesaid result. The investigation proved the miner to be responsible for not blasting the rock down when ordered to do so by the foreman.

No. 49. Albert Fox, a miner employed at Gowen slope, Nos. 1 and 3 Derringer colliery, was fatally injured on October 28, by a fall of coal.

He and his brother, were working in northwest counter No. 2. In the morning they were unable to work in that breast, the road-man not having completed the road, so the foreman told them to go into northwest "C" gangway, and load out their coal. They loaded four cars, and while waiting for more, they went up to breast "D" and drilled two holes, one in the rib and the other in the top. After firing the shots, he went up to the face and commenced to bar down the shattered bench, when a large peice of coal fell upon him, inflicting such injuries that he died thirty minutes later. After a careful investigation, I am of the opinion that with ordinary precaution this accident could have been everted.

No. 50. John Sivar, patcher, employed at the Harwood colliery, was fatally injured on November 15, by being crushed between locomotive and loaded mine care, on the surface. He was patcher on the locomotive, and the loaded cars taken from No. 1 are pushed up against the loaded cars on No. 4 turn-out, and held there until the locomotive and empty cars are pushed on No. 4 turn-out. The loaded cars are then drawn out on the main track. This is done to get the locomotive on the rear end, at the breaker. When the accident occurred they ran the trip as usual, but while the cars were being run off the siding, another car was hoisted from the slope and the deceased, John Sivar, told the top-man, Michael O'Hara, to run that car after the trip. The engineer with the locomotive followed the car run down by O'Hara, and reached it about the same time as the trip when running back. Sivar got on the bumper of the locomotive to couple the cars, but did not notice the trip coming back until the collision, when he was crushed between the derailed car and the locomotive, fracturing his skull. He died two hours later at the Hazleton Hospital.

No. 51. William Shellala, miner, employed at slope No. 4, Cranberry colliery, was killed on November 18, by a fall of rock. He had been at work robbing pillars and had been set to clean up another gangway with a view to relaying the track to continue robbing pillars, but according to the testimony of his laborer, he insisted, on the day of the accident, on going into the abandoned section of works to see whether or not it had caved. His laborer plead with him not to go, as he had been forbidden by the foreman, but he moved on a few steps when the rock fell upon him, with the aforesaid result.

No. 52. John Toniola, a miner employed in the Gamma vein, north section of Cranberry colliery No. 1, was killed on November 19, by a fall of coal. He was working in breast No. 26, West Gamma gangway, South Dip, and had fired a shot in the bottom bench, at face of breast, which evidently did not produce the expected result. He then commenced to work out the shot, and while engaged in barring, a part of the bottom bench, which protruded over his head, fell upon him, crushing his head. A careful examination of the place, together with the testimony of those first to render assistance, showed that he had ben cautioned by his laborer, who evidently saw the danger.

No. 53. Watkin Williams, a miner of many years experience, employed at Hazleton No. 1 colliery, was killed by a fall of clod on November 20. He and his partner, were working in breast No. 46, East Buck Mountain gangway. According to Jones, his laborer's testimony, Williams had fired a shot in the bottom bench in the morning, made the necessary trimming of the face and drilled another hole to fire when going home. But while working at the face he was caught by the falling clod. He should have blasted it down as he was told by Jones that it was unsafe, but he knew best what he was doing, and considered that he was able to care for himself, but when the fall came he was unable to escape.

No. 54. George Argust, repairman, employed on the night shift at Hazleton shaft No. 40 breaker, was fatally injured on November

21, by falling from the conveyor line to the tracks underneath the breaker, a distance of twenty feet. He, with the other three men on the repair gang, had almost completed their shift. He was the last of the four men to cross the conveyor line, and in some manner lost his balance and fell to the tracks, fracturing his skull. He was removed to the hospital, where he succumbed to his injuries several days later. This was an accident unavoidable under the conditions.

No. 55. Dennis Melley, a miner, employed at Highland No. 5 colliery, was instantly killed by a fall of rock on November 21. He and his partner were taking a cut out of a pillar, leaving a stump The rock fell without a moment's notice, with the result that Lowe barely escaped, while his partner, Melley, was killed. The investigation showed the miners to have been very much at fault in not standing props when they knew them to be necessary for their own safety. Lowe testified that Melley was at the face ten minutes before he was, because he was detained by loading the car. He reached the face about three minutes before the fall took place. He was working about nine feet from the buggy, while Melley was between the buggy and the stump. There was a shot in one of the neighboring breasts, and piece dropped from the top. He said, I called to Melley to look out, and I ran for safety, thinking my partner was in advance of me, and in fact, out of danger before me, until after the fall, when I found he was caught, and from the position in which we found him it was evident that he had fallen in trying to escape. I feel satisfied that had we given the proper attention to propping, the accident would not have occurred, but we believed the top safe. I had examined the roll and sounded the top in the morning. I also asked Melley to sound it. He took the drill and sounded it a little, and appeared to be satisfied as long as I thought it safe. The mistake we made was in not having props put in, but we never asked for props, but if I was sure that the piece I heard did fall from the top, we could have both been safe, with a minute to spare." The responsibility for this accident is plain after reading the testimony of Lowe, but it should be a lesson to all miners in the future with regard to propping.

No. 56. Michael Stever, a miner, employed at Beaver Meadow colliery. No. 2 slope, was fatally injured on November 27. He was working in breast No. 95. At this point the breast was flat, necessitating the use of a buggy. Assistant Foreman, William Sachs, visited the breast on the afternoon of the 25th, and found the clod in a dangerous condition. He ordered Stever to take it down, giving him powder for that purpose. He drilled a hole and fired it, and when asked by the foreman if he had taken it all down replied, "No," that he was going to drill another hole in it, but instead of doing so, he commenced to drill a hole in the bottom, and while thus engaged, the clod fell, inflicting such injuries as to result in death while he was being removed to the gangway. A careful examination of the place, together with the testimony of those first to appear after the accident, showed that the victim was alone responsible for starting a hole in the bottom before he had completed the work of taking down the clod, after commencing to do so, but this is becoming a common error with the miner. This man knew better, for he had several years experience as a miner.

No. 57. Benjamin Solt, fireman, employed at Cranberry No. 4 slope, was fatally injured on December 3. He was working as a fireman, and attended to boiler of fan engine. He was found lying semi-conscious between the partition of the boiler house and the boiler fan engine. Edward Winters, engineer, was the first on the scene, but was unable to obtain from the victim a statement of how it occurred. The investigation showed that the victim, while oiling the fan engine, carelessly moved about the running parts of the machinery, and in trying to pass between the moving belts, was caught and thrown againts the belt pulley with such force as to fracture his skull. His leg striking the side of the building resulted in the fracture of that member also.

No. 58. Frank Gallagher, slate picker, employed at Highland colliery No. 2, was fatally injured on December 7, and died at the Hazleton Hospital on the same day. This accident occurred at the noon hour, and the boy was not injured while in the discharge of his duty. Three cars and two trucks of timber stood at the head of the slope to be sent inside during the noon hour, and while the cars were being taken over the bridge, the boy, Gallagher, attempted to pass through a space of eighteen inches between the first car and truck, when the cars came together, crushing him with the aforesaid result. Investigation showed that he had no business in that section of the colliery, and had no occasion to pass between cars, as he could have readily gone around them.

No. 59. John Perambo, laborer, employed at Lansford shaft, No. 9 colliery, was instantly killed on December 24, by falling down a shaft 337.5 feet. He was employed as helper to the top man at top of the shaft. He and the top man had taken the loaded bucket on the truck out to the bank. On returning, the top man was on the front end of the truck driving the mule, making a fly of the truck into the head of the shaft. Perambo was on the rear end of the truck, using a sprag as a brake on the wheel, which failed to control the speed of the truck, which passed over the stop blocks, jerking the truck so that Perambo lost his balance and fell from the truck into the shaft. A careful examination, together with the testimony of witnesses, proved beyond question that this accident could have been averted had the top-man taken the usual precautions in taking the truck in to the head of the shaft, instead of resorting to the reckless method of flying the truck, as they did. Therefore, in my opinion, the top-man and his assistant were jointly responsible for the accident.

No. 60. John Oswallow, a miner employed at Cranberry colliery No. 1, north section, was fatally injured on December 27, and died shortly after being admitted to the Hazleton Hospital. He was a miner of seven years experience, but unfortunately, while barring clod down, he slipped and was caught by it. A careful examination of the breast, together with the testimony of witnesses, showed that it was a hazardous piece of work to take down the clod, owing to the pitch of the breast, which required the skill of the most experienced miner. He had been told by Assistant Foreman Miller that the top was bad, and he commenced to bar it down, taking every precaution for his own safety, when he slipped in the direction of the falling clod, by which he was injured. This, in my opinion was an unavoidable accident.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Fifth Anthracite District for the Year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
A. Pardee & Co.						
Cranberry,	Luzerne,	Frank Pardee,	Hazleton,		Hazleton,	Lehigh Valley Railroad.
East Crystal Ridge,	Luzerne,	Frank Pardee,	Hazleton,		Hazleton,	Lehigh Valley Railroad.
Coxe Bros. & Co., Inc.						
Drifton Nos. 1 and 2,	Luzerne,			L. C. Smith,	Drifton,	D. S. & S. R. R.
Eckley, including Buck Mt.,	Carbon,			L. C. Smith,	Drifton,	D. S. & S. R. R.
Stockton,	Luzerne,			L. C. Smith,	Drifton,	D. S. & S. R. R.
Beaver Meadow,	Carbon,			L. C. Smith,	Drifton,	D. S. & S. R. R.
Tomhicken,	Luzerne,			L. C. Smith,	Drifton,	D. S. & S. R. R.
Derringer and Gowan,	Luzerne,			L. C. Smith,	Drifton,	D. S. & S. R. R.
Lehigh Coal & Navigation Co.						
Colliery No. 1,	Carbon,	W. D. Zehner,	Lansford,			C. R. R. of N. J.
Colliery No. 4,	Carbon,	W. D. Zehner,	Lansford,			C. R. R. of N. J.
Colliery No. 5,	Carbon,	W. D. Zehner,	Lansford,			C. R. R. of N. J.
Colliery No. 6,	Carbon,	W. D. Zehner,	Lansford,			C. R. R. of N. J.
Colliery No. 9,	Carbon,	W. D. Zehner,	Lansford,			C. R. R. of N. J.
Screen building,	Carbon,	W. D. Zehner,	Lansford,			C. R. R. of N. J.
G. B. Markle & Co.						
Jeddo No. 4 and Ebervale,	Luzerne,	John Markle, Managing partner.	Jeddo,	W. H. Smith, Jr., General Superintendent.	Jeddo,	Lehigh Valley Railroad.
Highland No. 2,	Luzerne,		Jeddo,		Jeddo,	Lehigh Valley Railroad.
Highland No. 5,	Luzerne,	do.	Jeddo,		Jeddo,	Lehigh Valley Railroad.
A. S. Van Wickle Estate.						
Milnesville,	Luzerne,	Frank Pardee, Mgr.	Hazleton	John Harvey,	Milnesville,	Pennsylvania Railroad.
Coleraine and Evans,	Carbon,	Frank Pardee, Mgr.	Hazleton	John Harvey,	Milnesville,	P. R. R. & L. V. R. R.
Lehigh Valley Coal Co.						
Hazleton No. 1,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	F. E. Zerbey,	Hazleton,	Lehigh Valley Railroad.
Hazleton shaft,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	F. E. Zerbey,	Hazleton,	Lehigh Valley Railroad.
Spring Mountain,	Luzerne,	S. D. Warriner,	Wilkes-Barre,	F. E. Zerbey,	Hazleton,	Lehigh Valley Railroad.
Spring Brook,	Carbon,	S. D. Warriner,	Wilkes-Barre,	F. E. Zerbey,	Hazleton,	Lehigh Valley Railroad.
Calvin Pardee & Co.						
Lattimer colliery,	Luzerne,	A. W. Drake,	Lattimer,	C. Pardee, Jr.,	Lattimer,	D. S. & S. R. R.
Lattimer washery,	Luzerne,	A. W. Drake,	Lattimer,	C. Pardee, Jr.,	Lattimer,	D. S. & S. R. R.
Latimer stripping,	Luzerne,	A. W. Drake,	Lattimer,	C. Pardee, Jr.,	Lattimer,	D. S. & S. R. R.
Harwood colliery,	Luzerne,	A. W. Drake,	Lattimer,	C. Pardee, Jr.,	Lattimer,	D. S. & S. R. R.
Harwood stripping,	Luzerne,	A. W. Drake,	Lattimer,	C. Pardee, Jr.,	Lattimer,	D. S. & S. R. R.

Upper Lehigh Coal Co.						
Upper Lehigh,	Luzerne,	A. C. Leisenring,	Upper Lehigh,	George Wilmot,	Upper Lehigh,	C. R. R. of N. J.
C. M. Dodson & Co.						
Beaver Brook,	Luzerne,	E. L. Bullock,	Beaver Brook,			L. V. R. R. & C. R. R. of N. J.
M. S. Kemmerer & Co.						
Sandy Run,	Luzerne,	M. S. Kemmerer,	Mauch Chunk,	George D. Kugler,	Sandy Run,	C. R. R. of N. J.
J. S. Wentz & Co.						
Hazle Brook,	Luzerne,	John S. Wentz,		George Richert.	Hazle Brook,	Lehigh Valley Railroad.
Lehigh & Wilkes-Barre Coal Co.						
Tresckow No. 2,	Luzerne,	W. J. Richards.	Wilkes-Barre,	George B. Hadesty,	Audenreid,	C. R. R. of N. J.
Audenreid Coal Co.						
Stockton washery,	Luzerne,	W. R. McTurk,	Philadelphia,	W. J. Heiser,	Audenreid,	Lehigh Valley Railroad.
Tresckow washery,	Carbon,	W. R. McTurk,	Philadelphia,	W. J. Heiser,	Audenreid,	C. R. R. of N. J.
Black Creek Coal Co.						
Rowe colliery,	Luzerne,	James Rowe,	Beaver Meadow.			Lehigh Valley Railroad.
Harleigh,	Luzerne,	James Rowe,	Beaver Meadow.			Lehigh Valley Railroad.
Evans & Reese Coal Co.						
Dusky Diamond,	Luzerne,	T. R. Reese,	Audenreid,			Lehigh Valley Railroad.

TABLE II—Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Fifth Anthracite District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
A. Pardee & Co.												
Cranberry,	Luzerne,	307,154.11	33,347.18	3,786.16	344,289.05	245.1	932	7	4	9,865	41,250	123
East Crystal Ridge	Luzerne,	62,312.03	8,923.10	768.05	72,003.18	245.1	150	3	......	1,315	24,050	29
Total and average,	......	369,466.14	42,271.08	4,555.01	416,293.03	245.1	1,082	10	4	11,180	63,300	152
Coxe Brothers & Co., Inc.												
Drifton Nos. 1 and 2,	Luzerne,	204,566.00	42,608.19	9,766.15	256,941.14	289	777	......	5	3,448	10,846	68
Eckley and Buck Mountain,	Luz. & Carbon	193,547.02	28,973.14	1,485.05	224,006.01	286	396	......	1	1,777	30,503	38
Stockton,	Luzerne,	22,910.04	10,820.16	236.00	33,967.00	73	111	1	2	1,347	6,267	17
Beaver Meadow,	Carbon,	215,658.10	44,193.16	3,669.05	263,521.11	224	493	2	4	3,348	26,783	33
Tomhicken,	Luzerne,	......	......	......	......	......	25	......	......	509	613	6
Derringer and Gowan,	Luzerne,	274,549.15	21,158.02	5,085.00	300,792.17	243	642	4	5	5,136	14,549	89
Total and average,	......	911,231.11	147,755.07	20,242.05	1,079,229.03	223	2,444	7	17	15,565	89,561	251
Lehigh Coal and Navigation Co.												
Colliery No. 1,	Carbon,	288,515.19	22,914.00	2,637.00	314,066.19	247.5	581	2	4	1,920	54,500	92
Colliery No. 4,	Carbon,	145,295.05	28,683.00	4,366.05	178,344.08	186.3	384	1	5	720	18,550	67
Colliery No. 5,	Carbon,	184,595.00	9,823.00	5,191.00	208,804.00	222.3	346	......	......	840	12,250	41
Colliery No. 6,	Carbon,	......	9,195.00	......	......	......	312	1	......	840	44,600	28
Colliery No. 9,	Carbon,	206,331.05	15,032.00	8,581.05	230,144.10	227.4	664	1	......	180	79,000	78
Screen building,	Carbon,	......	......	......	......	326.6	336	......	......	......	......	......
Total and average,	......	824,937.07	85,647.10	20,775.10	931,359.17	242	2,623	5	9	4,500	208,900	306

G. B. Markle & Co.												
Jeddo No. 4 and Ebervale,	Luzerne,	415,541.07	35,469.17	1,399.10	452,410.14	230	1,147	4	9	11,712	79,336	149
Highland No. 5,	Luzerne,	348,141.01	42,126.02	1.13	390,268.16	231	744	4	5	9,486	6,370	49
Highland No. 2,	Luzerne,	188,623.15	25,595.05	5,942.18	220,161.18	244	537	1	3	6,062	12,287	79
Total and average,	......	952,306.03	103,191.04	7,344.01	1,062,841.08	235	2,428	9	17	27,260	97,993	277
A. S. Van Wickle Estate.												
Milnesville,	Luzerne,	138,361.00	65,647.00	2,076.00	206,084.00	250.7	620	......	2	1,334	97,350	44
Coleraine and Evans Colliery,	Carbon,	290,713.00	59,332.00	1,863.00	351,908 00	277.4	923	5	11	5,091	96,750	104
Total and average,	......	429,074.00	124,979.00	3,939.00	557,992.00	264	1,543	5	13	6,425	194,160	148
Lehigh Valley Coal Co.												
Hazleton No. 1,	Luzerne,	298,722.16	5,066.00	49,140.06	352,929.02	237.6	737	5	3	11,355	39,902	83
Hazleton shaft,	Luzerne,	429,169.05	15,457.00	2,131.04	446,757.09	245.5	1,115	9	4	14,905	129,696	85
Spring Brook,	Carbon,	34,830.06	6,864.00	238.00	41,932.06	89.2	140	......	2	......	650	7
Spring Mountain,	Luzerne,	118,966.03	20,687.00	1,093.05	140,746.08	186.5	329	1	......	2,862	14,101	36
Total and average,	......	881,688.10	48,074.00	52,602.15	982,365.05	189.7	2,321	15	9	29,122	184,349	211
Calvin Pardee & Co.												
Lattimer colliery,	Luzerne,	112,285.16	22,961.00	3,039.06	108,286.02	126.9	601	......	6	5,103	71,710	52
Lattimer washery,	Luzerne,	11,498.16	3,214.00	......	14,712.16	51.9	28	......	......	......	......	......
Lattimer stripping,	Luzerne,	......	......	......	......	73.5	175	......	1	......	......	23
Harwood colliery,	Luzerne,	277,455.00	36,500.00	1,374.09	315,329.09	275.4	778	2	4	6,782	45,350	72
Harwood stripping,	Luzerne,	......	......	......	......	71	45	......	......	......	......	2
Total and average,	......	431,239.12	62,675.00	4,413.15	498,328.07	151.4	1,627	2	11	11,885	117,069	149
Upper Lehigh Coal Co.												
Upper Lehigh,	Luzerne,	216,777.01	36,700.00	3,119.13	256,596.14	240.1	574	2	2	5,788	10,545	66
C. M. Dodson & Co.												
Beaver Brook,	Luzerne,	176,424.00	29,286.00	967.00	206,677.00	213	412	5	3	4,330	11,300	58
J. S. Wentz & Co.												
Hazle Brook colliery,	Luzerne,	140,251.00	8,000.00	953.00	149,204.00	272	404	......	1	2,461	16,777	30
M. S. Kemmerer & Co.												
Sandy Run,	Luzerne,	80,243.07	19,136.00	1,538.00	100,917.07	224.5	263	......	2	996	10,815	26
Lehigh and Wilkes-Barre Coal Co.												
Tresckow No. 2,	Carbon,	34,000.00	4,000.00	......	38,000.00	214.4	39	......	......	540	1,920	......
Audenreid Coal Co.												
Stockton washery,	Luzerne,	33,872.06	3,570.00	56.00	27,498.06	110.2	134	......	......	2	3,525	5
Tresckow washery,	Carbon,	39,472.13	1,200.00	......	40,672.13	169.4	147	......	1	......	......	6
Total and average,	......	73,344.19	4,770.00	56.00	78,170.19	139.8	281	......	1	2	3,525	11

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Black Creek Coal Co.												
Rowe colliery,	Luzerne,	8,168.00	567.00	1,421.00	10,156.00	276	31	......	......	440	150	9
Harleigh colliery,	Luzerne,	....	274.00	434.00	708.00	150	19	......	......	52	275	3
Total and average,	....	8,168.00	841.00	1,855.00	10,864.00	213	50	......	......	492	425	12
Evans and Reese.												
Dusky Diamond,	Luzerne,	....	708.00	5,400.00	6,100.00	280	9	......	......	100	300	......

Recapitulation.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
A. Pardee & Co.,	Luzerne,	369,466.14	42,271.18	4,555.01	416,293.03	245.1	1,082	10	4	11,180	65,300	152
Coxe Brothers & Co., Inc.,	Luzerne,	911,231.11	147,755.07	20,212.05	1,079,229.03	223	2,444	7	17	15,565	89,561	251
Lehigh Coal and Navigation Co.,	Carbon,	824,937.07	85,647.10	20,775.10	931,359.17	242	2,623	5	9	4,500	208,900	306
G. B. Markle & Co.,	Luzerne,	952,306.03	103,191.04	7,344.01	1,062,841.08	235	2,428	9	17	27,260	97,993	277
Lehigh Valley Coal Co.,	Luzerne,	881,688.10	48,074.00	52,602.15	982,365.05	189.7	2,321	15	9	29,122	184,349	211
Calvin Pardee & Co.,	Luzerne,	431,239.12	62,675.00	4,413.15	498,328.07	151.4	1,627	2	11	11,885	117,069	149
A. S. Van Wickle Estate,	Luzerne,	429,074.00	124,979.00	3,939.00	557,992.00	264	1,543	5	13	6,425	194,100	148
Upper Lehigh Coal Co.,	Luzerne,	216,777.01	36,700.00	3,119.13	256,596.14	240.1	574	2	2	5,788	10,545	66
C. M. Dodson and Company,	Luzerne,	176,424.00	29,286.00	967.00	206,677.00	213	420	5	3	4,330	11,300	58
M. S. Kemmerer & Co.,	Luzerne,	80,243.07	19,136.00	1,538.00	100,917.07	224.5	263	......	2	996	10,815	26
J. S. Wents & Co.,	Luzerne,	140,251.00	8,000.00	953.00	149,204.00	272	404	......	1	2,461	16,777	30
Lehigh and Wilkes-Barre Coal Co.,	Carbon,	34,000.00	4,000.00	....	38,000.00	214.4	39	......	......	540	1,920	......
Audenreid Coal Co.,	Luzerne,	73,344.19	4,770.00	56.00	78,170.19	139.8	281	......	1	2	3,525	11
Black Creek Coal Co.,	Luzerne,	8,168.00	841.00	1,855.00	10,864.00	213	50	......	......	492	425	12
Evans & Reese,	Luzerne,	....	700.00	5,400.00	6,100.00	280	9	......	......	100	300	3
Total and average,	....	5,529,152.04	718,026.19	127,761.00	6,374,939.03	223	16,108	60	89	120,646	1,012,879	1,700

TABLE II—Continued.

Names of Operators and Collieries.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
A. Pardee & Co.,	Luzerne,	51	1,530	22	2,730	4,260	10	......	......	39	3,895	15	23,100	7,600	......	1
Coxe Brothers & Co., Inc.,	Luzerne,	111	4,982	54	4,859	9,841	18	6	......	66	4,799	51	34,491	31,246	6	5
Lehigh Coal and Navigation Co.,	Carbon,	43	722	56	7,929	8,651	22	......	......	88	2,188	8	14,750	7,375	1	3
G. B. Markle & Co.,	Luzerne,	54	1,875	28	4,150	6,025	11	5	......	81	4,208	6	5,506	3,321	2	7
Lehigh Valley Coal Co.,	Luzerne,	82	1,720	33	4,960	6,680	14	......	......	48	5,600	15	20,360	8,800	2	3
Calvin Pardee & Co.,	Luzerne,	38	760	21	2,290	3,050	12	......	......	52	4,620	9	5,815	2,880	2	3
A. S. Van Wickle Estate,	Luzerne,	78	1,193	46	3,660	4,853	8	......	......	70	2,855	14	12,747	5,774	1	1
Upper Lehigh Coal Co.,	Luzerne,	66	1,990	6	595	2,585	6	......	......	37	1,235	17	19,100	7,800	......	......
C. M. Dodson & Co.,	Luzerne,	48	960	8	800	1,760	1	......	......	19	800	8	8,000	4,000	1	......
M. S. Kemmerer & Co.,	Luzerne,	22	880	2	200	1,080	2	......	......	10	431	3	3,080	3,000	......	......
J. S. Wentz & Co.,	Luzerne,	21	1,600	3	175	1,775	2	......	......	17	400	6	3,000	2,000	......	......
Lehigh and Wilkes-Barre Coal Co.,	Carbon,	20	1,000	1	50	1,050	......	......	......	2	200	2	2,992	991	......	......
Audenreid Coal Co.,	Luzerne,	12	388	5	200	588	1	......	......	21	620	3	3,000	800	......	......
Black Creek Coal Co.,	Luzerne,	......	....	5	250	250	......	......	......	2	140	....	....	....	......	......
Evans & Reese,	Luzerne,	......	....	1	90	90	......	......	......	2	40	....	....	....	......	......
Total and average,	....	646	21,600	291	30,938	52,458	107	11	......	554	32,031	157	155,961	85,587	15	23

TABLE III—Showing the number of each class of employes at each colliery in the Fifth Anthracite District during the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total inside outside.
		Inside foreman or mine boss.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
A. Pardee & Co.																	
Cranberry,	Luzerne,	3	5	309	149	57	38	57	618	1	24	27	69	2	191	314	932
East Crystal Ridge,	Luzerne,	1	1	41	50	16	5	8	122	......	4	7	....	....	17	28	150
Total and average,		4	6	350	199	73	43	65	740	1	28	34	69	2	208	342	1,082
Coxe Brothers & Co., Inc.,																	
Drifton Nos. 1 and 2,	Luzerne,	3	1	145	14	24	7	124	318	1	37	28	90	12	291	459	777
Eckley and Buck Mountain,	Luz. & Carbon	1	......	83	6	17	7	72	186	1	8	24	92	1	84	210	396
Stockton,	Luzerne,	1	......	46	2	6	2	24	81	1	1	15	....	1	12	30	111
Beaver Meadow,	Carbon,	1	......	85	40	17	4	82	229	1	10	19	138	1	95	264	493
Tomhicken,	Luzerne,	1	......	15	2	2	......	2	22	......	......	......	....	1	2	3	25
Derringer and Gowan,	Luzerne,	2	1	198	44	36	12	100	393	1	17	21	90	1	119	249	642
Total and average,		9	2	572	108	102	32	404	1,229	5	73	107	410	17	603	1,215	2,444
Lehigh Coal and Navigation Co.																	
Colliery No. 1,	Carbon,	3	7	121	47	30	16	110	334	2	10	42	87	1	105	247	581
Colliery No. 4,	Carbon,	1	3	52	40	28	8	100	232	1	4	21	78	....	48	152	384
Colliery No. 5,	Carbon,	1	3	44	28	13	8	96	193	1	6	14	76	....	56	153	346
Colliery No. 6,	Carbon,	1	2	63	61	17	10	115	269	1	6	12	....	....	24	43	312
Colliery No. 9,	Carbon,	3	4	103	162	25	9	167	473	1	19	27	82	....	71	191	664
Screen building,	Carbon,	......	......	....	....	....	....	....	....	1	11	25	192	....	107	336	336
Total and average,		9	19	383	338	113	51	588	1,501	7	47	141	515	1	411	1,122	2,623
G. B. Markle & Co.																	
Jeddo No. 4 and Ebervale,	Luzerne,	6	......	310	378	94	21	72	881	1	5	10	101	11	138	266	1,147
Highland No. 2,	Luzerne,	3	3	197	217	55	13	33	521	1	3	11	84	11	113	223	744
Highland No. 5,	Luzerne,	3	......	144	170	40	12	31	400	1	3	8	25	11	89	137	537
Total and average,		12	3	651	765	189	46	136	1,802	3	11	29	210	33	340	626	2,428

A. S. Van Wickle Estate.																	
Milnesville,	Luzerne,	1	.....	128	98	19	2	71	319	1	16	29	88	6	161	301	620
Coleraine and Evans,	Carbon,	4	1	214	192	40	1	40	492	1	25	48	83	8	266	431	923
Total and average,		5	1	342	290	59	3	111	811	2	41	77	171	14	427	732	1,543
Lehigh Valley Coal Co.																	
Hazleton No. 1,	Luzerne,	3	4	279	76	32	6	117	517	1	14	18	70	5	112	220	737
Hazleton shaft,	Luzerne,	4	4	395	221	39	12	145	820	1	18	32	58	6	180	295	1,115
Spring Brook,	Carbon,	1	.....	.....	4	.....	.....	3	8	1	5	15	19	1	91	132	140
Spring Mountain,	Luzerne,	2	1	71	.....	5	.....	25	161	1	18	26	14	2	77	168	329
Total and average,		10	9	745	358	76	18	290	1,506	4	55	91	191	14	460	815	2,321
Calvin Pardee & Co.																	
Lattimer colliery,	Luzerne,	8	1	63	31	19	9	143	274	2	26	21	70	11	124	254	528
Lattimer washery,	Luzerne,	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	27	28	28
Lattimer stripping,	Luzerne,	.....	.....	11	1	12	1	48	73	5	2	20	.....	.....	118	175	248
Harwood colliery,	Luzerne,	5	2	200	114	69	10	30	430	2	27	33	109	4	105	280	710
Harwood stripping,	Luzerne,	1	.....	2	63	2	.....	.....	68	3	.....	6	.....	.....	36	45	113
Total and average,		14	3	276	209	102	20	221	845	13	55	80	179	15	440	782	1,627
Upper Lehigh Coal Co.																	
Upper Lehigh colliery,	Luzerne,	2	3	100	92	44	1	19	261	2	17	41	89	7	157	313	574
C. M. Dodson & Co.																	
Beaver Brook,	Luzerne,	1	2	80	85	23	11	30	232	1	13	22	58	5	89	188	412
M. S. Kemmerer & Co.																	
Sandy Run,	Luzerne,	1	.....	53	63	10	3	12	142	1	5	22	58	2	33	121	263
John S. Wentz & Co.																	
Hazle Brook,	Luzerne,	2	1	92	40	31	10	59	235	1	7	23	79	7	52	169	404
Lehigh and Wilkes-Barre Coal Co.																	
Tresekow No. 2,	Carbon,	1	.....	16	12	4	2	.....	35	.....	.....	4	.....	.....	.....	4	39
Audenreid Coal Co.																	
Stockton washery,	Luzerne,	.....	.....	.....	.....	.....	.....	.....	.....	1	3	4	46	2	78	134	134
Tresekow washery,	Carbon,	.....	.....	.....	.....	.....	.....	.....	.....	1	3	6	52	2	83	147	147
Total and average,		.....	.....	.....	.....	.....	.....	.....	.....	2	6	10	98	4	161	281	281
Black Creek Coal Co.																	
Rowe colliery,	Luzerne,	1	.....	5	6	3	.....	.....	15	1	1	1	4	1	8	16	31
Harleigh colliery,	Luzerne,	1	.....	4	4	.....	.....	.....	9	1	1	2	.....	.....	6	10	19
Total and average,		2	.....	9	10	3	.....	.....	24	2	2	3	4	1	14	26	50
Evans & Reese.																	
Dusky Diamond,	Luzerne,	1	.....	1	3	.....	.....	.....	5	.....	.....	1	.....	1	2	4	9

Recapitulation.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total inside outside.
		Inside foreman or mine boss.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
A. Pardee & Co.,	Luzerne,	4	6	350	199	73	43	65	740	1	28	34	69	2	208	342	1,082
Coxe Bros. & Co., Inc.,	Luzerne,	9	2	572	108	102	32	404	1,229	5	73	107	410	17	603	1,215	2,444
Lehigh Coal and Navigation Co.,	Carbon,	9	19	383	338	113	51	588	1,501	7	47	141	515	1	411	1,122	2,623
G. B. Markle & Co.,	Luzerne,	12	3	651	765	189	46	136	1,802	3	11	29	210	33	340	626	2,428
Lehigh Valley Coal Co.,	Luzerne,	10	9	745	358	76	18	290	1,506	4	55	91	191	14	460	815	2,321
A. S. Van Wickle Estate,	Luzerne,	5	1	342	290	59	3	111	811	2	41	77	171	14	427	732	1,543
Calvin Pardee & Co.,	Luzerne,	14	3	276	209	102	20	221	845	13	55	80	179	15	440	782	1,627
Upper Lehigh Coal Co.,	Luzerne,	2	3	100	92	44	1	19	261	2	17	41	89	7	157	313	574
C. M. Dodson & Co.,	Luzerne,	1	2	80	85	23	11	30	232	1	13	22	58	5	89	188	420
M. S. Kemmerer & Co.,	Luzerne,	1	......	53	63	10	3	12	142	1	5	22	58	2	33	121	263
J. S. Wentz & Co.,	Luzerne,	2	1	92	40	31	10	59	235	1	7	23	79	7	52	169	404
Lehigh and Wilkes-Barre Coal Co.,	Carbon,	1	......	16	12	4	2	......	35	......	......	4	......	......	......	4	39
Audenreid Coal Co.,	Luzerne,	......	......	......	......	......	......	......	......	2	6	10	98	4	161	281	281
Black Creek Coal Co.,	Luzerne,	2	......	9	10	3	......	......	24	2	2	3	4	1	14	26	50
Evans & Reese,	Luzerne,	1	......	1	3	......	......	......	5	......	......	1	......	1	2	4	9
Total and average,	......	73	49	3,670	2,572	829	240	1,935	9,368	44	360	685	2,131	123	3,397	6,740	16,108

TABLE III—Continued.

Names of Operators and Collieries.	County.	Number of Days Worked Each Month in Breaker.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
A. Pardee & Co.,	Luzerne,	21.6	18.5	21.5	17.6	21.9	22.1	19.5	21.9	21.5	22.2	20.1	16.6	245.1
Coxe Brothers & Co., Inc.,	Luzerne,	21 1-5	19 2-5	22 4-5	17	20 1-5	23.5	21 3-4	24 1-4	21 1-4	24 1-4	22	16	223
Lehigh Coal and Navigation Co.,	Carbon,	23.9	16.9	19.3	22	23.8	22.3	23	19.6	20.5	20.8	20	17.6	242
G. B. Markle & Co.,	Luzerne,	22	21	21 2-3	19 1-3	21 1-3	21 1-3	18	20 1-3	18 1-3	19	19 1-3	13 1-3	235
Lehigh Valley Coal Co.,	Luzerne,	22	21.5	22.8	16.6	21.8	20.8	19.2	19.5	17.1	23.1	21.6	11.8	189.7
A. S. Van Wickle Estate,	Luzerne,	23.5	21.2	23.6	22.6	22 7	22.5	23.9	19.4	20.8	24.7	24.4	14.4	264
Calvin Pardee & Co.,	Luzerne,	20.1	16.5	25.4	22.6	25.3	24.7	13.3	24.6	14.1	22.5	18.8	11.3	151.4
Upper Lehigh Coal Co.,	Luzerne,	24	21.8	23.3	15.8	18.9	21.8	21.3	21.1	18.3	21.9	19.8	19.1	240.1
C. M. Dodson & Co.,	Luzerne,	19.7	17.6	19.5	17.7	17.4	18.3	18.2	18.5	15.9	18.7	17.3	14.2	213
M. S. Kemmerer & Co.,	Luzerne,	22.1	19.7	22.1	21.6	18	20.8	23	19.2	....	22.8	19.1	16.1	224.5
J. S. Wentz & Co.,	Luzerne,	26	22	23	19	26	19	21	24	23	26	25	18	272
Lehigh and Wilkes-Barre Coal Co.,	Carbon,	15	20	15	23	14	20.5	13.5	24	14	23.5	20.5	11.4	214.4
Audenreid Coal Co.,	Luzerne,	15	14.1	13.4	5.5	8.6	9.6	11.7	11.7	14.6	13.8	13.8	8.9	139.8
Black Creek Coal Co.,	Luzerne,	20	20	25	23	24	18.5	22.5	24	22	23.5	21.5	23	213
Evans & Reese,	Luzerne,	20	21	24	22	22	20	22	26	26	27	26	24	280

TABLE IV—List of fatal accidents that occurred in and about the Mines of the Fifth Anthracite District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	11	Frank Folwain,	Hungarian,	Miner,	40	M.	1	....	Beaver Brook,	Luzerne,...	Instintly killed by a fall of coal at face of breast in Lykens vein.
	12	Mike Masholock,	Pole,	Miner,	35	S.	....	....	Hazleton No. 5,	Luzerne,...	Fatally injured by a fall of slate in a breast due to an unforseen slip.
	12	Fred. Guiderjohn,	German,	Miner,	57	M.	1	....	East Crystal Ridge,	Luzerne,...	Fatally injured by a rush of coal at face of breast in Parlor vein.
	18	Alex. Mickaloski,	Pole,	Miner,	22	M.	1	....	Hazleton No. 1,	Luzerne,...	Fatally injured by the explosion of dynamite and saltpetre powder in the breast cross-cut.
	29	Joseph Hydock,	Hungarian,	Laborer,	21	M.	1	....	Upper Lehigh,	Luzerne,...	Instantly killed by a shale of top rock falling upon him while engaged with his miner laying track across a breast.
Feb.	4	Richard Williams,	American,	Patcher	18	S.	....	....	Upper Lehigh,	Luzerne,...	Skull fractured; squeezed between mule and mine car on the gangway.
	4	John Kasilika,	Hungarian,	Outside hitcher,	30	M.	1	1	Coleraine,	Carbon,....	Instantly killed; crushed between mine cars at foot of rock plane on the surface.
	6	Charles Howls,	American,	Jig tender,	17	S.	....	....	Stockton,	Luzerne,...	Fatally injured; caught by main driving shaft in the breaker.
	7	Andrew Sochrell,	Hungarian,	Dump man,	42	M.	1	....	Beaver Meadow st ping.	Carbon,....	Instantly killed while dumping a car of clay on the bank.
	11	Mike Bodinskey,	Pole,	Laborer,	32	S.	....	....	Jeddo No. 4,	Luzerne,...	Instantly killed; squeezed between a mine car and temporary gangway leg.
	11	Patrick Gallagher,	Irish,	Motor runner,	24	S.	....	....	Highland No. 5,	Luzerne,...	Instantly killed; crushed between derailed motor and rib.
	21	George Feddor,	Slav,	Miner,	42	M.	1	4	Beaver Brook,	Luzerne,...	Instantly killed by a fall of bony coal at face of breast in Lykens Valley vein.
	23	Mike Lukash,	Hungarian,	Laborer,	37	M.	1	3	East Crystal Ridge,	Luzerne,...	Instantly killed; crushed between a loose rock and a gangway collar.
March	2	John Bongo,	Hungarian,	Miner,	22	S.	....	....	Hazleton No. 5,	Luzerne,...	Instantly killed by a fall of slate at face of breast.

	2	Martin Shafanie,	German,	Miner,	27	S.	....	....	Hazleton No. 3,	Luzerne,	Fatally injured while running along the gangway; he stumbled over a miners needle, the point penetrating his stomach.
	2	Andrew Podesin,	Hungarian,	Repairman,	42	M.	1	....	Hazleton No. 8,	Luzerne,	Killed by a runaway car while repairing tracks at foot of No. 8 slope.
	6	John Jcetzewicz,	Hungarian,	Laborer,	22	S.	....	....	Cranberry,	Luzerne,	Killed by a fall of slate at face of breast in the Parlor vein.
	8	John Henry Richards,	American,	Fireman,	27	M.	1	3	Nesquehoning shaft,	Carbon,	Fatally injured; run down by locomotive in the gangway.
	13	Jacob Doman,	Pole,	Miner,	58	M.	1	5	East Crystal Ridge,	Luzerne,	Killed while riding along the gangway in an empty car.
April	2	Mike Pasdon,	Italian,	Laborer,	25	M.	1	2	Hazleton No. 5,	Luzerne,	Killed by fall of a bench of top coal at face of breast in Buck Mountain vein.
	11	Andrew Bore,	Hungarian,	Miner,	44	M.	1	7	Evans colliery,	Carbon,	Both instantly killed by a premature explosion of dynamite.
	11	John Salko,	Hungarian,	Laborer,	27	M.	1	....	Evans colliery,	Carbon,	
	12	Eugene Gabour,	German,	Bratticeman,	21	S.	....	....	Hazleton No. 5,	Luzerne,	Fatally injured; struck by a piece of coal thrown by a shot.
	13	George Pado,	Hungarian,	Loader,	20	S.	....	....	Coleraine,	Carbon,	Killed; squeezed between a slate truck and foundation wall of breaker.
	13	Baptista Clauser,	Austrian,	Miner,	31	S.	....	....	Gowan Nos. 1 and 3,	Luzerne,	Fatally injured by a fall of coal and slate in a breast.
	18	John McGarvey,	American,	Slate picker,	14	S.	....	....	Spring Mountain,	Carbon,	Fatally injured; run down by slate truck under breaker.
	29	John Shewick,	Pole,	Miner,	37	M.	1	5	Hazleton No. 3,	Luzerne,	Killed by a fall of slate in the gangway.
July	9	James Moy,	American,	Patcher,	18	S.	....	....	Highland No. 5,	Luzerne,	Instantly killed; crushed between rib of gangway and derailed air motor.
	11	Ignatius Zubick,	Hungarian,	Laborer,	32	M.	1	....	Lansford,	Carbon,	Killed by a rock falling upon him at face of gangway.
	17	Miko Mochnotch,	Hungarian,	Miner,	46	M.	1	....	Beaver Brook,	Luzerne,	Fatally injured by fall of clod at face of breast.
	23	Frank Harrit,	Hungarian,	Laborer,	54	M.	1	....	Derringer,	Luzerne,	Fatally injured; squeezed between mine car and locomotive near breaker.
	25	Joseph Kowolski,	Pole,	Miner,	42	M.	1	....	Hazleton No. 5,	Luzerne,	Killed by the premature explision of dynamite while tamping the same.
	25	George Vasloski,	Hungarian,	Laborer,	38	S.	....	....	Hazleton No. 5,	Luzerne,	
Aug.	1	Thos. Meman,	American,	Driver,	19	S.	....	....	Nesquehoning No. 1,	Carbon,	Killed by falling under a trip of cars on the gangway.
	2	Otto Brien,	Pole,	Miner,	56	M.	1	4	Hazleton No. 1,	Luzerne,	Fatally injured by a fall of rock; while preparing a prop the rock fell.
	6	Mike Remock,	Slav,	Miner,	52	M.	1	5	Jeddo No. 4,	Luzerne,	Both killed by a rush of coal after a shot.
	6	Andrew Chippis,	Slav,	Miner,	36	M.	1	4	Jeddo No. 4,	Luzerne,	
	29	Samuel Rupert,	American,	Miner,	28	M.	1	2	Gowan No. 4,	Luzerne,	Killed by a fall of clod near the face of breast in No. 3 Buck Mountain vein.
Sept.	11	Joseph Jacquot,	French,	Miner,	60	M.	1	....	Highland No. 5,	Luzerne,	Fatally injured by a premature blast in a breast in Buck Mountain vein.
	16	John Tewador,	Hungarian,	Miner,	35	M.	1	....	Beaver Brook,	Luzerne,	Killed by a fall of coal and slate at face of breast while barring after a shot.
Oct.	7	Lewis Yellon,	Hungarian,	Laborer,	36	M.	1	3	Ebervale,	Luzerne,	Instantly killed by a fall of rock in a breast, due to the carelessness of his miner.
	11	John Stachura,	Hungarian,	Miner,	25	M.	1	1	Beaver Brook,	Luzerne,	Fatally injured by a fall of clod while robbing pillars.
	11	Metro Bublisky,	Slav,	Miner,	33	M.	1	2	Evans colliery,	Carbon,	Killed by a fall of rock.

TABLE IV—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Nov.	15	Stephen Singley, ...	American, ..	Laborer, ...	38	M.	1	6	Cranberry, ...	Luzerne,...	Fatally injured; struck by a piece of coal while crossing the foot of breaker plane.
	22	Peter Oleskey, ...	Pole, ...	Loader, ...	30	M.	1	1	Lansford No. 4, ...	Carbon,....	Killed by returning too soon to what he supposed to be a miss shot.
	24	Constanta Kokanski, ...	Pole, ...	Miner, ...	32	M.	1	2	Hazleton No. 1, ...	Luzerne,...	Fatally injured by a fall of clod at face of breast.
	24	Frank Ball, ...	Pole, ...	Laborer, ...	23	S.	....	....	Cranberry No. 1, ...	Luzerne,...	Fatally injured; pelvis fractured by a fall of clod in a breast.
	28	Joseph Yaraslnski, ...	Pole, ...	Laborer, ...	19	S.	....	....	Harwood, ...	Luzerne,...	Killed by a fall of clod at face of breast, due to the carelessness of his miner.
	28	Albert Fox, ...	American, ..	Miner, ...	22	S.	....	....	Gowan Nos. 1 and 3,.	Luzerne,...	Instantly killed by a fall of top coal at face of breast.
	15	John Sivar, ...	American, ..	Patcher, ...	20	S.	....	....	Harwood, ...	Luzerne,...	Fatally Injured; crushed between cars and locomotive on the surface.
	18	William Shellala, ...	Russian, ...	Miner, ...	41	M.	1	4	Cranberry No. 4, ...	Luzerne,...	Killed by a fall of rock while perambulating about an abondoned section of workings.
	19	John Toniola, ...	Tyrolean, ..	Miner, ...	36	M.	1	3	Cranberry No. 1,.....	Luzerne,...	Killed by a fall of coal at face of breast in Gamma vein.
	21	Watkin Williams, ...	American, ..	Miner, ...	48	M.	1	1	Hazleton No. 1, ...	Luzerne,...	Killed by a fall of clod near face of breast in Buck Mountain vein.
	21	George Argust, ...	American, .	Repairman, ...	18	S.	....	....	Hazleton No. 40 B.,..	Luzerne,...	Fatally injured by falling from egg coal slate conveyor line to the tracks under the breaker.
	22	Dennis Melley, ...	Irish, ...	Miner, ...	46	M.	1	1	Highland No. 5, ...	Luzerne,...	Killed by a fall of rock in a breast while employed at robbing pillars.
	27	Mike Stever, ...	Hungarian.	Miner, ...	40	M.	1	4	Beaver Meadow, ...	Carbon,....	Killed by a fall of clod in breast.
Dec.	3	Benjamin Solt, ...	American, ..	Fireman, ...	45	M.	1	2	Cranberry No. 4, ...	Luzerne,...	Fatally injured by moving recklessly about a fan engine.
	7	Frank Gallagher, ...	American, ..	Slate picker..,.	14	S.	....	....	Highland No. 2, ...	Luzerne,...	Fatally injured; squeezed between timber cars on top of slope.
	24	John Perambo, ...	Pole, ...	Laborer, ...	26	S.	....	....	Lansford No. 9 shaft,	Carbon,....	Killed by falling down a shaft, a distance of 337½ feet.
	27	John Oswallow, ...	Pole, ...	Miner,...........	30	S.	....	....	Cranberry, ...	Luzerne,...	Killed by a fall of clod in a breast.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Fifth Anthracite District for the year ending December 31, 1901.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County	Nature and Cause of Accident in Brief.
Jan. 3	Harry Miller,	American,	Dumper,	63	M.	Evans colliery,	Carbon,	Shoulder bone fractured by falling.
3	Wm. Blauchfield,	American,	Car runner,	17	S.	Coleraine,	Carbon,	Leg fractured while attempting to uncouple cars.
16	James Thompson,	American,	Miner,	37	M.	Jeddo No. 4,	Luzerne,	Seriously burned by an explosion of powder.
18	Felix Palrock,	Hungarian,	Miner,	30	S.	Highland No. 2,	Luzerne,	Leg fractured by a fall of slate.
18	Obinento Sagese,	Italian,	Driver,	32	S.	Lattimer stripping,	Luzerne,	Hip dislocated by falling from a mule.
19	Benj. Duffy,	American,	Hitcher,	30	S.	Sandy Run,	Luzerne,	Both legs fractured; crushed between mine cars.
19	Andrew Rintka,	Hungarian,	Dumper,	40	M.	Hazle Brook,	Luzerne,	Painfully injured; squeezed between mine car and side of breaker.
23	Joseph Edwards,	Welsh,	Miner,	....	M.	Lansford No. 9,	Carbon,	Leg fractured by a piece of coal falling from the rib of schute.
24	John Dubroski,	Austrian,	Miner,	43	M.	Spring Brook,	Carbon,	Contused back by a fall of coal.
Feb. 1	Robert Wisley,	American,	Door boy,	17	S.	Nesquehoning No. 1,	Carbon,	Leg fractured; squeezed between a locomotive and a door frame.
1	Joseph Harmotta,	Hungarian,	Outside loader,	....	M.	Derringer,	Luzerne,	Ribs fractured; squeezed between car and side of breaker.
11	Tony Stansel,	Italian,	Laborer,	22	S.	Hazleton shaft breaker,	Luzerne,	Skull fractured; squeezed between a car and breaker timber.
12	Augustus Zimmerman,	American,	Miner,	31	M.	Highland No. 5,	Luzerne,	Eye injured by a flying piece of coal.
18	Samuel Houser,	American,	Laborer,	18	S.	Nesquehoning,	Carbon,	Arm fractured while unloading a car on culm bank.
19	Thos. McGill,	Irish,	Miner,	56	S.	Sandy Run,	Luzerne,	Leg fractured by premature blast.
25	Joseph Howak,	Hungarian,	Laborer,	30	S.	Lansford No. 4,	Carbon,	Burned by an explosion of gas.
26	John Sigow,	Slav,	Laborer,	24	S.	Highland No. 5,	Luzerne,	Back injured by a fall of rock.
28	John Sharkey,	Irish,	Miner,	38	S.	Lattimer, G slope,	Luzerne,	By an explosion of dynamite while tamping a hole in the top rock. Sharkey had his right hand blown off and eye injured; Tuorella, skull fractured; Dani, eyes injured.
28	Veto Tuorella,	Italian,	Laborer,	31	M.	Lattimer, G slope,	Luzerne,	
28	Peter Dani,	Hungarian,	Laborer,	38	M.	Lattimer, G slope,	Luzerne,	
March 6	Simon Diamatro,	Italian,	Laborer,	18	S.	Harwood,	Luzerne,	Painfully injured by falling into conveyor at the breaker.
12	Jacob Brugger,	Austrian,	Miner,	54	M.	Derringer,	Luzerne,	Leg fractured by a piece of coal falling and striking his leg.
13	Philip Guydock,	Hungarian,	Laborer,	35	M.	Hazleton No. 3 stripping,	Luzerne,	Skull fractured by fall of rock.
16	Michael Murrin,	American,	Laborer,	42	M.	Drifton No. 2,	Luzerne,	Leg fractured by a collision of cars.
18	John Dungo,	American,	Tool carrier,	17	S.	Lattimer No. 3 B,	Luzerne,	Foot crushed; jumping off cars.

TABLE V—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
	18	John C. Sowers,	American,	Driver,	16	S.	Lattimer No. 8,	Luzerne,...	Skull fractured while attempting to jump on a car.
	19	Guytano Muncuso,	Italian,	Slate picker,	14	S.	Lattimer No. 3,	Luzerne,...	Arm fractured by falling from a railroad car to the track.
	23	Andrew Zubal,	Hungarian,	Miner,	36	M.	Milnesville,	Luzerne,...	Leg fractured while loading a car of rock.
	26	Chas. Miller,	Prussian,	Supply clerk,	55	M.	Hazleton No. 1,	Luzerne,...	Ribs fractured; squeezed between timber cars.
	26	Peter Lakemore,	Pole,	Laborer,	32	M.	Jeddo No. 4,	Luzerne,...	Ankle fractured; struck by a piece of rock.
	27	Michael Gugan,	Hungarian,	Miner,	54	M.	Eckley No. 10,	Luzerne,...	Leg fractured by a fall of coal.
April	11	Frank Scanlon,	Irish,	Driver,	26	S.	Highland No. 5,	Luzerne,...	Arm fractured; squeezed between mine cars.
	13	Lewis Martini,	Austrian,	Miner,	23	S.	Derringer,	Luzerne,...	Back and legs injured by a fall of coal.
	20	Anthony Brezinsky,	Pole,	Miner,	29	M.	Highland No. 5,	Luzerne,...	Legs fractured; squeezed between mine cars.
	22	Howard Evans,	American,	Outside loader,	17	S.	Colerain,	Carbon,....	Leg fractured; caught between cars and breaker.
	26	Andrew Ouders,	Hungarian,	Miner,	33	M.	Lansford No. 4,	Carbon,....	Hands and face burned by an explosion of ags in a breast.
	26	Michael Subek,	Hungarian,	Miner,	34	M.	Lansford No. 4,	Carbon,....	
	26	Harry Shook,	American,	Miner,	30	M.	Lansford No. 4,	Carbon,....	
May	6	Albert Stoeber,	German,	Miner,	23	S.	Cranberry,	Luzerne,...	Struck by pieces of coal thrown from a blast.
	23	Chas. Romanosky,	Pole,	Laborer,	24	S.	Lansford No. 4,	Carbon,....	Internally injured between a piece of rock and battery prop.
	27	Wm. Graham,	American,	Foreman,	35	M.	Harwood,	Luzerne,...	Head and neck lacerated by premature blast.
June	5	Michael Guzan,	Hungarian,	Laborer,	29	M.	Beaver Meadow,	Carbon,....	Leg fractured by a fall of clod.
	10	Andrew Cardisko,	Slav,	Miner,	36	M.	Jeddo No. 4,	Luzerne,...	Leg and ear injured by a fall of rock.
	10	Chas. Gallagher,	Irish,	Patcher,	35	S.	Coleraine,	Carbon,....	Leg and arm fractured by falling under cars.
	19	Daniel Kisthardt,	American,	Miner,	56	M.	Hazleton No. 1,	Luzerne,...	Leg fractured by falling while walking through the tunnel.
	20	Michael Vandango,	Pole,	Laborer,	24	M.	Cranberry,	Luzerne,...	Foot crushed by a stick of timber falling upon it.
	26	Manus Boyle,	American,	Laborer,	26	....	Ebervale,	Luzerne,...	Leg broken by a piece of coal falling from the rib.
	27	Peter Lemon,	Italian,	Laborer,	50	M.	Coleraine,	Carbon,....	Scalded by steam from boiler, due to breaking of th blow-off pipe.
July	10	John Staroskey,	Slav,	Jig tender,	35	M.	Drifton,	Luzerne,...	Seriously injured by falling between belt and pulley on breaker.
	10	John Blarney,	American,	Miner,	26	S.	Milnesville,	Luzerne,...	Shoulder dislocated by falling down a breast manway.
	11	Thomas Davis,	Welsh,	Laborer,	28	M.	Coleraine,	Carbon,....	Leg fractured by the breaking of a pulley; the rope struck him.
	20	Lewis Ferdinand,	Italian,	Laborer,	20	S.	Drifton,	Luzerne,...	Skull fractured; squeezed between cars.

	20	Sylvester Sims,	American,	Teamster,	60	M.	Jeddo,	Luzerne,	Compound fracture of collar bone by falling from a wagon.
	24	John Ring,	Hungarian,	Laborer,	....	M.	Stockton,	Luzerne,	Leg fractured; struck by hoist rope.
Aug.	3	Sofel Domocofski,	Pole,	Laborer,	29	S.	Harwood,	Luzerne,	Leg fractured by a fall of clod.
	5	Fred. Hollar,	Pole,	Laborer,	35	S.	Highland No. 2,	Luzerne,	Shoulder dislocated by fall of coal.
	13	Mike Slohta,	Hungarian,	Car runner,	25	M.	Stockton,	Luzerne,	Thumb cut off; caught between the bumpers of cars.
	28	George Eadle,	Hungarian,	Miner,	51	M.	Beaver Brook,	Luzerne,	Leg fractured while breaking a lump of coal.
	28	John Sosack,	Pole,	Laborer,	42	M.	Beaver Brook,	Luzerne,	Hand cut off; struck by a piece of coal.
	30	Irvin Gladwick,	German,	Miner,	42	M.	Jeddo No. 4,	Luzerne,	Leg fractured by fall of coal.
Sept.	4	Stephen Koresser,	Austrian,	Laborer,	23	S.	Highland No. 5,	Luzerne,	Leg fractured by a fall of coal.
	11	Joseph Fabian,	Hungarian,	Miner,	25	M.	Highland No. 2,	Luzerne,	Leg fractured by a fall of coal.
	21	Edward Wagner,	American,	Driver,	18	S.	Nesquehoning shaft,	Carbon,	Leg fractured; caught between car and door frame.
	23	Mike Durcovic,	Hungarian,	Miner,	37	M.	Coleraine,	Carbon,	Hips badly contused; squeezed between a car and prop.
	24	John Roynok,	Hungarian,	Miner,	40	S.	Coleraine,	Carbon,	Lacerated scalp by a fall of coal.
	24	Mike Ondo,	Hungarian,	Laborer,	25	S.	Coleraine,	Carbon,	Shoulder bone fractured by a fall of coal.
Oct.	5	Chas. F. Frasher,	American,	Outside foreman,	38	M.	Spring Brook,	Carbon,	Leg fractured by mine car on culm bank.
	14	Jacob Leisberger,	German,	Miner,	48	M.	Drifton No. 2,	Luzerne,	Leg fractured by fall of slate.
	17	John Sundra,	Pole,	Driver,	19	S.	Cranberry,	Luzerne,	Internally injured; squeezed between mine car and rib.
	18	William Petrovich,	Lithuanian,	Miner,	29	M.	Cranberry,	Luzerne,	Head and arm injured by a piece of coal from a shot.
	18	John Yonic,	Hungarian,	Miner,	55	M.	Harwood,	Luzerne,	Contused back by a fall of slate.
	19	Frank Kobeski,	Pole,	Miner,	46	M.	Hazleton No. 5,	Luzerne,	Seriously injured by premature explosion of dynamite.
	23	John Fosicatch,	Hungarian,	Laborer,	19	S.	Beaver Brook,	Luzerne,	Leg fractured by a piece of coal from a shot.
	23	Mike Yeager,	Hungarian,	Miner,	42	M.	Jeddo No. 4,	Luzerne,	Knee cap fractured by a fall of slate.
	23	Wm. McArdle,	American,	Miner,	44	M.	Nesquehoning No. 1 tunne	Carbon,	Painfully injured while drilling out a missed shot.
	26	Andrew Garniga,	Hungarian,	Patcher,	32	M.	Jeddo No. 4,	Luzerne,	Seriously injured by a fall of clod.
	31	Joseph Kliner,	Austrian,	Miner,	20	S.	Derringer,	Luzerne,	Leg fractured while playing on the gangway.
Nov.	12	John Boyer,	German,	Miner,	21	M.	Hazleton No. 3,	Luzerne,	Leg fractured by a fall of bony coal at face of breast.
	13	John Tote,	Hungarian,	Laborer,	18	S.	Upper Lehigh stripping,	Luzerne,	Leg fractured; squeezed between locomotive and dump car on the stripping.
	14	Joseph Fitzgerald,	American,	Sweeper,	17	S.	Beaver Meadow,	Carbon,	Severely injured; caught by set screw on jig shaft in the breaker.
	16	Angello Dimarco,	Italian,	Laborer,	32	S.	Coleraine,	Carbon,	Leg fractured while dumping a buggy of coal on the stripping.
	21	John Pikush,	Hungarian,	Laborer,	26	M.	Beaver Meadow,	Carbon,	Leg fractured by a fall of coal.
Dec.	6	John Moceny,	Hungarian,	Jackman,	30	M.	Coleraine stripping,	Carbon,	Leg fractured by a piece of frozen earth.
	10	Neal Boyle,	Irish,	Door boy,	15	S.	Drifton No. 2,	Luzerne,	Leg fractured by a mine car.
	15	Nicholas Maneyon,	Italian,	Outside laborer,	36	S.	Hazleton No. 1,	Luzerne,	Leg fractured; while assisting to remove a box from a car; it fell upon his leg.
	17	James Boyle,	American,	Pump man,	....	S.	Beaver Meadow,	Carbon,	Leg fractured in pump machinery.
	26	Condy J. Gallagher,	American,	Patcher,	22	S.	Upper Lehigh,	Luzerne,	Collar bone fractured; caught between locomotive and a post.
	26	Arthur Rupert,	American,	Patcher,	19	S.	Derringer,	Luzerne,	Finger cut off while trying to open sand pipe on locomotive.
	31	George Bellish,	Slav,	Laborer,	35	M.	Jeddo No. 4,	Luzerne,	Back contused by falling into manway.

Sixth Anthracite District.

SCHUYLKILL COUNTY.

Shenandoah, Pa., March 5, 1902.

Hon. James W. Latta, Secretary of Internal Affairs, Harrisburg, Pa.:

Sir: I have the honor of herewith presenting my annual report as Inspector of Mines for the Sixth Anthracite Coal District for the year ending December, 1901. It contains the usual yearly tabular statements of mine accidents, number of each class of employes, quantity of coal produced and shipped as given by each operator, number of persons employed, number of fatal and non-fatal accidents that occurred in and about the collieries, number of tons of coal produced per life lost, number of tons of coal produced per accident. The report also shows the classification of accidents, occupation of persons killed and injured, and other memoranda as yearly reported.

The report for 1901, shows that there were seventy-three fatal, and 144 non-fatal accidents, an increase of eight fatal and fourteen non-fatal as compared with 1900, still the number of tons produced per life lost for 1901 exceeds that of the year 1900 by 2,768 tons.

Number of tons of coal produced per life lost for the year 1901,	110,777
For the year 1900,	108,009
An increase in tons of,	2,768
Production of coal in tons during the year 1901,	8,086,320
During the year 1900,	7,020,571
An increase in tons of,	1,065,749

Very respectfully,
WILLIAM STEIN,
Mine Inspector.

TABLE A—Showing the Production of Coal, Number of Persons Employed by Each Company During the Year 1901, and Average Number of Tons Produced per Employe.

Names of Companies.	Number of tons produced.	Number of persons employed.
Philadelphia and Reading Coal and Iron Co.,	4,571,870.08	11,917
Lehigh Valley Coal Co.,	795,745	2,236
Lehigh and Wilkes-Barre Coal Co.,	568,440.16	1,186
Mill Creek Coal Co.,	437,152.05	796
Lentz & Co.,	366,388	820
Silver Brook Coal Co.,	170,352	408
Coxe Brothers & Co., Incorporated,	319,729	720
Susquehanna Coal Co.,	236,516	748
Thomas Coal Co.,	83,177	277
Lawrence Coal Co.,	144,111	425
Cambridge Coal Co.,	53,752	134
Furnace Coal Co.,	40,138	100
Stoddart Coal Co.,	55,188	68
Brookwood Coal Co.,	93,017	138
Girardville Coal Co.,	21,404	117
Carson Coal Co.,	26,953	132
North American Coal Co.,	102,387	55
Total,	8,086,320.05	20,277

Average number of tons produced per employe, 398.08.

TABLE B—Number of Fatal Accidents and Tons of Coal Produced per Life Lost.

Names of Companies.	Number of fatal accidents.	Number tons of coal produced per life lost.
Philadelphia and Reading Coal and Iron Co.,	40	140,296 7-10
Lehigh Valley Coal Co.,	10	79,574.05
Lehigh and Wilkes-Barre Coal Co.,	4	142,110
Mill Creek Coal Co.,	7	65,307
Lentz & Co.,	1	366,388
Silver Brook Coal Co.,	3	56,784
Coxe Brothers & Co., Incorporated,	1	319,729
Susquehanna Coal Co.,	1	236,516
Thomas Coal Co.,	2	41,583.05
Lawrence Coal Co.,	....	144,111
Cambridge Coal Co.,	1	53,752
Furnace Coal Co.,	....	40,138
Stoddart Coal Co.,	....	55,188
Brookwood Coal Co.,	....	93,017
Girardville Coal Co.,	....	21,404
Carson Coal Co.,	....	26,953
North American Coal Co.,	3	34,129
Total and average,	73	110,771

TABLE C—Number of Fatal and Non-Fatal Accidents and Number of Tons of Coal Produced per Accident.

Names of Companies.	Number of accidents.	Number tons of coal produced per accident.
Philadelphia and Reading Coal and Iron Co.,	127	35,998
Lehigh Valley Coal Co.,	45	17,683
Lehigh and Wilkes-Barre Coal Co.,	7	81,205
Mill Creek Coal Co.,	11	39,741
Lentz & Co.,	7	52,341
Silver Brook Coal Co.,	3	56,784
Coxe Brothers & Co., Incorporated,	3	106,576
Susquehanna Coal Co.,	4	59,129
Thomas Coal Co.,	4	20,794
Lawrence Coal Co.,	....	144,111
Cambridge Coal Co.,	2	26,876
Furnace Coal Co.,	....	40,138
Stoddart Coal Co.,	....	55,188
Brookwood coal Co.,	....	93,017
Girardville Coal Co.,	....	21,404
Carson Coal Co.,	....	26,953
North American Coal Co.,	4	25,596
Total and average,	217	37,264

TABLE D—Classification of Accidents.

	Killed or fatally injured.	Injured.	Total.
Explosion of gas,	4	32	....
Igniting loose powder,	3	15	....
By blasts,	3	9	....
Drowned by rush of water from old workings,	3	....	....
Falling down slopes,	2	1	....
By machinery on surface,	3	3	....
Falls of coal and rock,	29	48	....
Falling under cars,	11	15	....
Run over by locomotive,	1	1	....
Falling down tramway,	2	3	....
Falling down chute,	1	....	....
Miscellaneous, inside,	6	10	....
Miscellaneous, outside,	5	7	....
Total,	73	144	217

TABLE E—Occupation of Persons Killed and Injured.

Occupation.	Killed or fatally injured.	Injured.	Total.
Miners,	34	89	....
Laborers,	16	26	....
Drivers,	4	5	....
Starters,	....	2	....
Loader boss,	2	1	....
Door boy,	1	1	....
Repairman,	3	....	....
Plane tender,	....	1	....
Carpenter,	....	2	....
Car loader,	....	1	....
Driver,	....	1	....
Laborer,	7	4	....
Fireman,	....	1	....
Machinist,	....	3	....
Car runner,	....	1	....
Tip man,	....	2	....
Locomotive man,	3	1	....
Screen tender,	1	....	....
Slate picker,	2	3	....
Total,	73	144	217

TABLE F—Nationalities of Persons Killed and Injured.

	Americans.	English.	Germans.	Welsh.	Irish.	Poles.	Hungarians.	Tyroleans.	Italians.	Lithuanians.	Russians.	Austrians.	Slavs.	Greeks.	Total.
Killed,	18	4	1	1	8	28	2	1	3	5	1	....	1	....	73
Injured,	36	4	4	9	6	62	5	....	3	11	2	1	....	1	144
Total,	54	8	5	10	14	90	7	1	6	16	3	1	1	1	217

Table Showing the Quantity of Coal Produced and Shipped During the Years 1900 and 1901.

	Years.	
	1900.	1901.
Quantity of coal produced in tons,	7,020,571.05	8,086,320.05
Quantity of coal shipped,	6,053,635.14	7,050,537.04

Summary of Sixth Anthracite District 1901.

Total production of coal in tons,	8,086,320.05
Used for steam and heat,	935,220
Sold to local trade and employes,	100,563
Shipped by railroad,	7,050,537.04
Number of tons produced from washeries which is included in total production,	308,847
Average number of days worked,	193.5
Number of persons employed,	20,277
Number of fatal accidents,	73
Number of non-fatal accidents,	144
Number fatal accidents, inside,	60
Number fatal accidents, outside,	13
Number of non-fatal accidents inside,	125
Number of non-fatal accidents, outside,	19
Number of wives left widows,	35
Number of children left fatherless,	86
Number of kegs of powder used,	162,622
Number of pounds of dynamite used,	644,866
Number of horses and mules,	2,002
Number of cylindrical steam boilers,	446
Number of tubular steam boilers,	345
Total horse power of boilers,	64,496
Number of pumps,	124
Capacity in gallons per minute,	116,953
Number of steam engines of all classes,	513
Total horse power,	50,991
Number of electric dynamos,	2
Number of air compressors,	18
Steam locomotives,	41
Air locomotives,	11

Number of Breakers, Mine Openings, Stripping Pits and Washeries.

Thirty-six breakers are in operation in the district, in connection wth which there are fifty-five openings to surface, through which coal is hoisted, and nine stripping pits that supply the breakers with coal. There are also seven washeries.

Improvements at Collieries.

The improvements under this head are tunnels driven from one seam to another to maintain or increase the present shipments, additional fans erected and the boiler power increased at some collieries.

Hammond colliery operated by the Philadelphia and Reading Coal and Iron Company. The new breaker which was commenced in June, 1901, is now nearing completion, and a new tubular boiler plant has been installed.

At Maple Hill colliery operated by the same company, two high pressure Norwalk air compressors have been installed, which will supply air to two locomotives on shaft level, and one on No. 2 plane, which are expected to do the work of forty mules.

Mine Fires.

On November 12th a fire was discovered by the fire boss in No. 11 breast, East Mammoth seam, Packer No. 2 colliery, operated by the Lehigh Valley Coal Company. It seemed, on my first visit to the colliery, as though the fire would extend faster into the old "gob" than the workmen could follow it up, and lines of pipe were gotten quickly in position to conduct water to the fire, and a sufficient quantity of air to carry off the gases generated from the fire so as to enable the workmen to get close enough to do efficient work. Openings were made up the sides of pillars on either side of fire and the connected by a cross-heading through the "gob." It was successfully extinguished in nine days. The fire was caused by the night workmen in some way igniting old dry timber while putting up relief timber in gangway. I have frequently suggested the use of Davy or Clanny safety lamps when men are timbering.

On the 5th of September, a fire was discovered in the fifth east level Mammoth seam of the Draper colliery operated by the Philadelphia and Reading Coal and Iron Company. Draper and Gilberton collieries are connected by a tunnel driven across the basin and the water from both collieries is hoisted up Gilberton water shaft. The hoisting of water was stopped until the fire was submerged. The fire originated from a naked lamp used by a driver igniting a pocket of gas above the gangway laggings at a point where the coal is very friable, causing the fire to spread rapidly, which necessitated drowning.

Examination of Candidates for Mine Foreman's Certificates.

The annual examination for mine foreman's certificates was held in the court house, Pottsville, 5th and 6th June.

The examiners were Thomas F. Downing, Mine Inspector; John C. McGinnis, superintendent; Michael J. Brennan and John Reing, miners.

The following were granted certificates for mine foreman: John R. James, Shenandoah; David R. Roberts, St. Nicholas. Names of those granted a certificate for assistant mine foreman: Hugh F. Boyle, Kelayers; Peter W. McGonigle, Shenandoah; James Weldon, Mahanoy City; Oscar L. Steel, Mahanoy City.

TABLE I— Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Sixth Anthracite District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Phila. & Read. Coal & Iron Co.						
Bear Ridge,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Boston Run,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Draper,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Ellangowan,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Girard Mammoth,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Girard washery,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Gilberton,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Hammond,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Indian Ridge,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Knickerbocker,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Kohinoor,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Mahanoy City,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Maple Hill,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
North Mahanoy,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
St. Nicholas,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Suffolk,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Shenandoah City,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Turkey Run,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Tunnel Ridge,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
West Shenandoah,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Lehigh Valley Coal Co.						
Packer No. 2,	Schuylkill,	S. D. Warriner,	Wilkes-Barre,	R. S. Mercur,	Centralia,	Lehigh Valley.
Packer No. 3,	Schuylkill,	S. D. Warriner,	Wilkes-Barre,	R. S. Mercur,	Centralia,	Lehigh Valley.
Packer No. 4,	Schuylkill,	S. D. Warriner,	Wilkes-Barre,	R. S. Mercur,	Centralia,	Lehigh Valley.
Packer No. 5,	Schuylkill,	S. D. Warriner,	Wilkes-Barre,	R. S. Mercur,	Centralia,	Lehigh Valley.
Primrose,	Schuylkill,	S. D. Warriner,	Wilkes-Barre,	F. E. Zerbey,	Centralia,	Lehigh Valley.
Silver Brook Coal Co.						
Silver Brook,	Schuylkill,	James Long,	Silver Brook,	James Long,	Silver Brook,	Lehigh Valley.
Coxe Bros. & Co., Inc.						
Oneida Nos. 1, 2 and 3,	Schuylkill,			Luther C. Smith,	Drifton,	Del., Sus. & Schuylkill.
W. R. McTurk & Co.						
Girardville washery,	Schuylkill,	W. R. McTurk,	320 Walnut street, Philadelphia.	Jas. McConnell,	Girardville,	Philadelphia and Reading.
Stoddart Coal Co.						
Stoddart washery,	Schuylkill,		Gilberton,	D. H. McGee,	Minersville,	Philadelphia and Reading.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Carson Coal Co.						
Carson washery, ...	Schuylkill,....	H. E. Rissinger,....	Audenreid, ...	....	....	Central R. R. of N. J.
North American Coal Co.						
Schuylkill No. 1 washery, ...	Schuylkill,...	H. W. Saums, ...	Wilkes-Barre, ...	James I. Sharkey,...	West Pittston, ...	Philadelphia and Reading.
Brookwood Coal Co.						
Brookwood washery, ...	Schuylkill,....	Henry Myers, ...	Minersville, ...	Wm. Speidel, ...	Frackville, ...	Philadelphia and Reading.
Raven Run, ...	Schuylkill,....	Henry Myers, ...	Minersville, ...	M. E. Jones, ...	Girardville, ...	Philadelphia and Reading.
Lehigh & Wilkes-Barre Coal Co.						
Audenreid No. 4, ...	Schuylkill,....	W. J. Richards,....	Wilkes-Barre, ...	Geo. B. Hadesty, ...	Audenreid, ...	Central R. R. of N. J.
Honey Brook No. 5, ...	Schuylkill,....	W. J. Richards,....	Wilkes-Barre, ...	Geo. B. Hadesty, ...	Audenreid, ...	Central R. R. of N. J.
Mill Creek Coal Co.						
Vulcan, ...	Schuylkill,....	T. D. Jones, ...	New Boston, ...	J. Elmer Jones, ...	New Boston, ...	Lehigh Valley.
Buck Mountain, ...	Schuylkill,....	T. D. Jones, ...	New Boston, ...	J. Elmer Jones, ...	New Boston, ...	Lehigh Valley.
Thomas Coal Co.						
Kehleys Run, ...	Schuylkill,....	Thomas Baird,.....	Shenandoah, ...	Thos. Baird, ...	Shenandoah, ...	Philadelphia and Reading.
Cambridge Coal Co.						
Cambridge, ...	Schuylkill,....	J. C. McGinnis,....	Frackville, ...	J. C. McGinnis, ...	Frackville, ...	Philadelphia and Reading.
Lawrence Coal Co.						
Lawrence, ...	Schuylkill,....	W. J. Miller,.......	Frackville, ...	W. J. Miller, ...	Frackville, ...	Philadelphia and Reading.
M. A. Gerber & S. A. Seaman.						
Furnace, ...	Schuylkill,...	M. A. Gerber, ...	Tamaqua, ...	M. A. Gerber, ...	Tamaqua, ...	Philadelphia and Reading.
Lentz & Co.						
Park No. 2, ...	Schuylkill,....	Wm. O. Lentz,......	Mauch Chunk, ...	Edward Reese, ...	Park Place, ...	Lehigh Valley.
Susquehanna Coal Co.						
William Penn, ...	Schuylkill,....	Morris Williams, ..	Wilkes-Barre, ...	E. A. Rhoads, ...	Shaft P. O.,........	Pennsylvania.

TABLE II—Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Sixth Anthracite District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Philadelphia & Reading Coal and Iron Co.												
Bear Ridge,	Schuylkill,	88,098.16	16,484	2,986	107,568.16	217 5-20	234	2	1	834	5,199½	41
Boston Run,	Schuylkill,	141,589	25,719	63	167,371	230 4-20	445	......	3	1,562	41,456	33
Draper,	Schuylkill,	179,118.17	16,095	220	195,433.17	232 6-20	468	1	3	2,945	30,501½	54
Ellangowan,	Schuylkill,	422,950.07	37,426	539	460,915.07	214 12-20	1,123	3	7	14,290	14,339	110
Girard Mammoth,	Schuylkill,	49,369.17	18,218	761	68,348.17	161 19-20	216	......	......	534	3,948	42
Girard washery,	Schuylkill,	10,498.04	....	....	10,498.04	49 18-20	21	......	......	....	....	......
Gilberton,	Schuylkill,	213,560.10	46,375	2,591	262,526.10	212 11-20	567	4	3	1,568	45,180	57
Hammond,	Schuylkill,	42,330.15	21,826	1,934	66,090.15	70 17-20	106	......	......	1,117	8,688	14
Indian Ridge,	Schuylkill,	205,020.05	19,011	8,604	232,635.05	208 7-20	699	1	7	5,550	5,164	56
Knickerbocker,	Schuylkill,	240,632.02	23,636	1,158	265,426.02	223 19-20	773	2	9	6,772	35,754	56
Kohinoor,	Schuylkill,	98,934.06	15,421	....	114,355.06	166 11-20	467	1	2	2,337	3,101	48
Mahanoy City,	Schuylkill,	206,121.06	48,422	29,210	283,753.06	229 5-20	606	1	1	5,695	9,371½	63
Maple Hill,	Schuylkill,	499,212.09	30,718	....	529,930.09	223 11-20	1,220	5	8	14,360	14,830	111
North Mahanoy,	Schuylkill,	355,533.08	46,731	2,581	404,845.08	231 5-20	961	7	5	8,912	14,993	95
St. Nicholas,	Schuylkill,	221,753.12	36,573	347	258,673.12	233 11-20	663	2	7	4,706	27,284	81
Suffolk,	Schuylkill,	321,647.02	22,493	1,262	345,402.02	234 1-20	901	4	7	11,458	10,915	85
Shenandoah City,	Schuylkill,	213,601.17	40,969	20,903	275,473.17	226 18-20	827	2	1	8,517	6,306	61
Turkey Run,	Schuylkill,	116,027.07	11,770	....	127,797.07	167 14-20	568	3	9	2,234	6,919	53
Tunnel Ridge,	Schuylkill,	312,269.18	53,458	....	365,727.18	224 18-20	887	1	12	7,150	26.663	79
West Shenandoah,	Schuylkill,	16,560.10	12,536	....	29,096.10	28 7-20	165	1	2	404	847	12
Total,	....	3,954,830.08	543,881	73,159	4,571,870.08	3,790 9-20	11,917	40	87	100,945	311.459½	1,151
Lehigh and Wilkes-Barre Coal Co.												
Audenreid No. 4,	Schuylkill,	230,252.00	27,327	3,100	260,679.01	214.4	598	2	1	5,656	31,490	53
Honey Brook No. 5,	Schuylkill,	264,201.15	43,560	....	307,761.15	211.5	588	2	2	3,733	61,066	51
Total,	....	494,453.15	70,887	3,100	568,440.16	213	1,186	4	3	9,389	92,556	104

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Mill Creek Coal Co.												
Vulcan,	Schuylkill,	217,511.17	17,255	....	234,766.17	235.6	388	4	3	6,844	4,998	40
Buck Mountain,	Schuylkill,	184,500.08	17,885	....	202,385.08	227.5	408	3	1	5,279	2,664	40
Total,	....	402,012.05	35,140	....	437,152.05	231.1	796	7	4	12,123	7,662	80
Thomas Coal Co.												
Kehleys Run,	Schuylkill,	80,475	1,878	824	83,177	232	277	2	2	1,420	17,550	26
Cambridge Coal Co.												
Cambridge,	Schuylkill,	49,664	1,500	3,188	53,752	209.6	134	1	1	1,600	2,200	8
Lawrence Coal Co.												
Lawrence,	Schuylkill,	114,913	27,350	1,848	144,111	242	425	......	......	125	51,000	39
M. A. Gerber & S. A. Seaman.												
Furnace,	Schuylkill,	37,078	3,060	....	40,138	211 4-10	100	......	......	1,120	6,000	9
Lentz & Co.												
Park No. 2,	Schuylkill,	337,497	27,778	1,113	366,388	216	820	1	6	7,849	12,550	101
Susquehanna Coal Co.												
William Penn,	Schuylkill,	195,474	38,996	2,046	236,516	185 65-100	748	1	3	6,715	28,500	81
Lehigh Valley Coal Co.												
Packer No. 2,	Schuylkill,	11,109	16,897	368	28,374	....	237	......	7	2,696	7,438½	30
Packer No. 3,	Schuylkill,	107,672	12,524	862	121,058	117.5	364	1	8	2,691	9,147	53
Packer No. 4,	Schuylkill,	194,698	30,415	112	225,225	118.15	505	3	8	800	5,552½	36
Packer No. 5,	Schuylkill,	232,484	32,479	6,045	271,008	220.25	643	4	8	3,856	36,684½	84
Primrose,	Schuylkill,	138,166	8,753	3,161	150,080	196.6	467	2	4	3,833	15,832	77
Total,	....	684,129	101,068	10,548	795,745	163½	2,236	10	35	13,876	74,654½	280

Silver Brook Coal Co.												
Silver Brook,	Schuylkill,	153,852	15,000	1,500	170,352	201.3	408	3	......	1,598	15,600	32
Coxe Brothers & Co.												
Oneida Nos. 1, 2 and 3,	Schuylkill,	262,392	54,485	2,852	319,729	273	720	1	2	5,821	23,434	69
W. R. McTurk & Co.												
Girardville washery,	Schuylkill,	20,317	1,007	80	21,404	103 2-10	117	......	......	41	1,700	6
Stoddart Coal Co.												
Stoddart washery,	Schuylkill,	50,968	4,220	....	55,188	211 6-10	68	......	......	....	....	2
Carson Coal Co.												
Carson washery,	Schuylkill,	25,453	1,500	....	26,953	141	132	......	......	....	....	8
North American Coal Co.												
Schuylkill No. 1 washery,	Schuylgill,	99,712	2,670	5	102,387	178	55	3	1	....	....	2
Brookwood Coal Co.												
Brookwood washery,	Schuylkill,	49,652	3,000	....	52,652	162	43	......	......	....	....	2
Raven Run washery,	Schuylkill,	38,265	1,200	300	39,765	122	37	......	......	....	....	......
Stanton washery,	Schuylkill,	....	600	....	600	....	58	......	......	....	....	2
Total,	....	87,917	4,800	300	93,017	284	138	......	......	....	....	4
Grand total,	....	7,050,537.04	935,220	100,563	8,086,320.05	*197	20,277	73	144	162,622	644,866	2,002

*Average

TABLE II—Continued.

Names of Operators and Collieries.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Philadelphia and Reading Coal and Iron Co.,	Schuylkill,	162	4,860	206	26,720	31,580	15	8	......	173	28,181	58	64,890	51,200	......	14
Lehigh and Wilkes-Barre Coal Co.,	Schuylkill,	63	3,150	19	2,700	5,850	7	......	......	21	1,400	9	15,217	7,608	1	......
Mill Creek Coal Co.,	Schuylkill,	56	3,200	4	590	3,790	1	2	......	37	2,910	2	2,000	1,300	......	1
Thomas Coal Co.,	Schuylkill,	24	720	......	....	720	1	......	......	10	730	2	1,260	1,260	......	......
Cambridge Coal Co.,	Schuylkill,	4	90	1	45	135	1	......	......	5	135	....	....	....	......	......
Lawrence Coal Co.,	Schuylkill,	......	....	20	3,000	3,000	......	......	......	12	830	5	3,000	2,640	......	......
M. A. Gerber & S. A. Seaman,	Schuylkill,	6	72	3	240	312	......	......	......	1	....	....	....	....	......	......
Lentz & Co.,	Schuylkill,	4	160	13	3,250	3,410	2	......	......	3	175	3	4,800	....	......	......
Susquehanna Coal Co.,	Schuylkill,	32	640	10	1,250	1,890	1	......	......	19	1,380	5	3,000	2,000	......	1
Lehigh Valley Coal Co.,	Schuylkill,	71	2,859	24	4,600	7,459	6	......	......	142	10,794	14	8,536	5,836	......	1
Silver Brook Coal Co.,	Schuylkill,	......	....	8	1,250	1,250	2	......	......	19	1,240	6	5,250	5,250	......	......
Coxe Bros. & Co.,	Schuylkill,	24	1,174	13	1,581	2,755	4	1	......	26	1,800	20	9,000	8,383	1	1
W. R. McTurk & Co.,	Schuylkill,	......	....	3	255	255	......	......	......	8	239	....	....	....	......	......
Stoddart Coal Co.,	Schuylkill,	......	....	3	330	330	1	......	......	12	172	....	....	....	......	......
Carson Coal Co.,	Schuylkill,	......	....	4	310	310	......	......	......	10	290	....	....	....	......	......
North American Coal Co.,	Schuylkill,	......	....	4	700	700	......	......	......	6	280	....	....	....	......	......
Brookwood Coal Co.,	Schuylkill,	......	....	6	750	750	......	......	......	9	435	....	....	....	......	......
Grand total,		446	16,925	345	47,571	64,496	41	11	......	513	50,991	124	116.953	85,477	2	18

TABLE III—Showing the number of each class of employes at each colliery in the Sixth Anthracite District during the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Phila. & Reading Coal and Iron Co.																	
Bear Ridge,	Schuylkill,	1	2	25	31	13	2	53	127	1	4	13	43	2	44	107	234
Boston Run,	Schuylkill,	1	3	50	49	23	3	106	235	2	6	24	84	2	92	210	445
Draper,	Schuylkill,	1	6	124	30	26	5	106	298	2	7	17	81	3	60	170	468
Ellangowan,	Schuylkill,	2	9	305	237	43	13	144	753	2	9	24	204	5	126	370	1,123
Girard Mammonth,	Schuylkill,	1	1	35	25	13	2	36	113	1	5	17	38	1	41	103	216
Girard washery,	Schuylkill,	......	......	....	....	....	....	....	....	......	......	......	8	....	13	21	21
Gilberton,	Schuylkill,	1	6	103	31	26	5	153	325	2	8	28	98	2	104	242	567
Hammond,	Schuylkill,	1	5	8	6	....	....	7	27	2	6	17	....	1	53	79	106
Indian Ridge,	Schuylkill,	3	4	151	98	35	7	115	413	3	9	25	146	4	99	286	699
Knickerbocker,	Schuylkill,	2	8	149	89	20	9	134	411	2	9	25	223	5	98	362	773
Kohinoor,	Schuylkill,	1	5	177	75	30	9	56	293	1	6	21	94	3	49	174	467
Mahanoy City,	Schuylkill,	2	3	170	59	36	18	125	413	2	5	20	102	4	60	193	606
Maple Hill,	Schuylkill,	3	13	361	105	85	21	202	790	2	10	26	252	3	137	430	1,220
North Mahanoy,	Schuylkill,	4	4	229	131	42	17	214	641	2	8	19	162	3	126	320	961
St. Nicholas,	Schuylkill,	1	5	87	94	20	14	200	421	......	8	15	102	1	116	242	663
Suffolk,	Schuylkill,	2	7	270	93	29	15	198	614	2	6	25	130	3	121	287	901
Shenadoah City,	Schuylkill,	2	7	210	113	28	16	167	543	2	8	19	169	3	83	284	827
Turkey Run,	Schuylkill,	3	5	102	123	20	9	146	408	1	6	17	60	3	73	160	568
Tunnel Ridge,	Schuylkill,	3	5	207	87	48	19	216	585	4	10	24	167	3	94	302	887
West Shenandoah,	Schuylkill,	2	......	....	13	....	....	8	23	1	10	15	....	2	114	142	165
Total,		36	98	2,703	1,489	537	184	2,362	7,409	34	140	391	2,163	53	1.703	4.484	11,893

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total. inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Lehigh and Wilkes-Barre Coal Co.																	
Audenreid No. 4,	Schuylkill,	3	2	156	157	22	12	46	398	1	9	28	98	2	62	200	598
Honey Brook No. 5,	Schuylkill,	3	2	86	87	17	1	205	401	4	25	33	76	9	100	247	648
Total,		6	4	242	244	39	13	251	799	5	34	61	174	11	162	447	1,246
Mill Creek Coal Co.																	
Vulcan,	Schuylkill,	1	1	155	46	12	7	13	235	1	6	16	85	4	41	153	388
Buck Mountain,	Schuylkill,	1	1	124	68	18	2	21	235	1	7	27	93	5	40	173	408
Total,		2	2	279	114	30	9	34	470	2	13	43	178	9	81	326	796
Thomas Coal Co.																	
Kehley's Run,	Schuylkill,	2	1	61	50	9	3	12	138	1	4	10	78	2	44	139	277
Cambridge Coal Co.																	
Cambridge,	Schuylkill,	1	......	36	8	5	....	30	80	1	2	5	27	2	17	54	134
Lawrence Coal Co.																	
Lawrence,	Schuylkill,	1	2	79	65	12	13	58	230	1	7	29	110	2	46	195	425
M. A. Gerber and S. A. Seaman.																	
Furnace,	Schuylkill,	1	1	19	23	3	....	....	47	1	2	5	25	2	18	53	100
Lentz & Co.																	
Park No. 2,	Schuylkill,	3	2	215	149	97	6	51	553	1	28	26	108	5	99	267	820

Susquehanna Coal Co.																	
William Penn,	Schuylkill,	1	5	237	72	29	8	120	472	1	15	34	101	6	119	276	748
Lehigh Valley Coal Co.																	
Packer No. 2,	Schuylkill,	1	3	111	32	12	2	34	195	1	4	14	....	1	22	42	237
Packer No. 3,	Schuylkill,	1	4	131	72	26	10	71	315	1	5	10	....	1	32	49	364
Packer No. 4,	Schuylkill,	1	3	78	18	9	2	43	154	1	32	25	89	4	200	351	505
Packer No. 5,	Schuylkill,	1	6	161	63	30	4	90	355	1	21	20	135	3	108	288	643
Primrose,	Schuylkill,	1	3	128	52	35	6	91	316	1	8	14	40	3	85	151	467
Total,		5	19	609	237	112	24	329	1,335	5	70	83	264	12	447	881	2,216
Silver Brook Coal Co.																	
Silver Brook,	Schuylkill,	1	1	38	16	25	4	27	112	3	11	25	138	3	116	296	408
Coxe Bros. & Co., Incorporated.																	
Oneida Nos. 1, 2 and 3,	Schuylkill,	3	......	209	37	30	11	100	390	1	11	38	136	1	143	330	720
W. R. McTurk & Co.																	
Girardville washery,	Schuylkill,	1	1	17	12	3	1	5	40	1	7	6	22	2	39	77	117
Stoddart Coal Co.																	
Stoddart washery,	Schuylkill,	......	......	....	....	....	....	....	....	1	2	7	10	2	30	52	52
Carson Coal Co.																	
Carson washery,	Schuylkill,	......	......	....	....	....	....	....	....	1	4	7	73	2	45	132	132
North American Coal Co.																	
Schuylkill No. 1 washery,	Schuylkill,	......	......	....	....	....	....	....	....	1	......	6	3	2	43	55	55
Brookwood Coal Co.																	
Brookwood washery,	Schuylkill,	......	......	....	....	....	....	....	....	1	4	6	6	....	26	43	43
Raven Run washery,	Schuylkill,	......	......	....	....	....	....	....	....	2	4	4	2	....	25	37	37
Stanton washery,*	Schuylkill,	1	......	13	13	....	....	....	27	......	2	4	....	....	25	31	58
Total,		1	......	13	13	....	....	....	27	3	10	14	8	....	76	111	138
Grand total and average,		64	136	4,787	2,529	931	276	3,379	12,102	63	360	790	3,618	116	3,228	8,175	20,277

*Not shipping yet.

TABLE III—Continued.

Names of Operators and Collieries.	County.	Number of days Worked Each Month in Breaker.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Philadelphia and Reading Coal and Iron Co.,	Schuylkill,	19.2	15.8	18.1	13.1	16.7	17.8	12.9	15.2	16.2	19.2	17.3	11	189.5
Lehigh and Wilkes-Barre Coal Co.,	Schuylkill,	21.1	18	19.7	15.1	14.7	19.9	19.25	15.7	18.2	21.9	19.4	9.8	212.9
Mill Creek Coal Co.,	Schuylkill,	21.8	18.8	21.4	17	20.9	20	16.4	18.8	18.1	21.5	20.7	15.8	231.5
Thomas Coal Co.,	Schuylkill,	23¼	20¾	23½	12½	21	22½	15¼	19	19¾	23	19¾	11¾	232
Cambridge Coal Co.,	Schuylkill,	18.1	16.4	20.4	12.0	18.1	18.7	14.3	19.3	17.8	19.2	19.7	15.6	209.6
Lawrence Coal Co.,	Schuylkill,	25½	20 1-10	22½	11 9-10	23	22½	21 3-10	22 6-10	20 7-10	21 4-10	17 4-10	13½	242.4
M. A. Gerber & S. A. Seaman,	Schuylkill,	19	18	18 8-10	12	17 4-10	18 4-10	16 1-10	20 9-10	17 3-10	19 6-10	17 6-10	16 3-10	211 4-10
Lentz & Co.,	Schuylkill,	21.6	18.5	20.5	15.8	20.0	20.1	16.5	17.2	17.6	21.0	18.2	9.0	216
Susquehanna Coal Co.,	Schuylkill,	19.25	4.30	11.30	18.65	18.80	18.15	18.30	16.75	14.60	18.30	15.75	11.50	185.65
Lehigh Valley Coal Co.,	Schuylkill,	15.8	9.9	14.5	9.6	16.6	19.1	13.1	13.3	12.7	12	15.7	10	163.1
Silver Brook Coal Co.,	Schuylkill,	20.7	16.7	18.1½	13.6½	14.8	17.4	16.4½	16.9½	15.8½	18.4½	16.2	16½	201.3
Coxe Bros. Co., Incorporated,	Schuylkill,	22	22	24	18	25	25	24	26	22	24	24	17	273
W. R. McTurk & Co.,	Schuylkill,	14	4	12	15	13	14	1	....	....	6	9 4-10	14 8-10	103 2-10
Stoddart Coal Co.,	Schuylkill,	19 2-10	15 3-10	14	12	19 7-10	20 7-10	18 1-10	20 7-10	17 3-10	21 7-10	19 8-10	13 7-10	211 1-10
Carson Coal Co.,	Schuylkill,	14.2	9.8	15.4	9.4	9.2	3.6	18.7	7.3	16.9	10.2	11.2	15.1	141.0
North American Coal Co.,	Schuylkill,	17	4	9	9	15	15	12	18	18	22	20	19	178
Brookwood Coal Co.,	Schuylkill,	15½	1½	11½	9	17½	14½	11	14	12½	8	11½	15½	142
Grand total and average,	....	....	....	....	....	....	....	....	....	....	....	....	....	193 3-10

TABLE IV—List of fatal accidents that occurred in and about the mines of the Sixth Anthracite District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	1	Thomas Pesusky,	Pole,	Laborer,	55	M.	1	1	Cambridge,	Schuylkill,	Stepped in front of loaded car. Died same day.
	5	William Mullahey,	American,	Laborer,	18	S.	....	....	Suffolk,	Schuylkill,	Arm and foot crushed. Fell of locomotive. Died 7th.
	7	Ignace Chicanovitch,	Lithuanian,	Miner,	45	M.	1	2	Vulcan,	Schuylkill,	Cut on head. Charge exploded. Died 9th.
	8	Peter Oloshefskie,	Pole,	Miner,	40	M.	1	4	Packer No. 5,	Schuylkill,	Broken neck. Walked into counter schute. Died same day.
	11	James Williams,	American,	Driver,	21	S.	....	....	Primrose,	Schuylkill,	Leg crushed by car. Died 12th.
	11	Geo. Crawshaw,	English,	Laborer,	52	M.	1	3	Suffolk,	Schuylkill,	Killed; struck by a car loaded with timber.
	14	John Barnhard,	American,	Breaker boy,	17	S.	....	....	Oneida,	Schuylkill,	Foot crushed, leg broken and badly cut. Fell under trip of cars. Died 15th.
	15	Evan Williams,	Welsh,	Miner,	50	M.	1	4	Vulcan,	Schuylkill,	Killed. Piece of bench coal fell on his head.
	17	John O'Donnell,	Irish,	Laborer,	22	S.	....	....	North Mahanoy,	Schuylkill,	Killed. A piece of slate fell from the top.
	17	Peter Entwistle,	American,	Miner,	35	S.	....	....	North Mahanoy,	Schuylkill,	Killed; a piece of slate fell from the top.
	19	Michael Perock,	Hungarian,	Laborer,	35	M.	1	1	North Mahanoy,	Schuylkill,	Fatally injured. A piece of coal fell off the ribs, and knocked him down a schute.
	24	Mart Ansulavige,	Pole,	Miner,	24	S.	....	....	Packer No. 3,	Schuylkill,	Killed by fall of coal.
Feb.	1	Thos. Higgins,	Irish,	Laborer,	30	S.	....	....	Bear Ridge,	Schuylkill,	Killed. A piece of frozen dirt fell on him.
	7	Gedra Casper,	Pole,	Miner,	27	M.	1	....	Suffolk,	Schuylkill,	Fatally injured. Fell down manway. Died same day.
	13	Thos. Gussie,	Hungarian,	Laborer,	23	S.	....	....	Bear Ridge,	Schuylkill,	Killed. A piece of frozen bank fell on him.
	16	Mike Mullakufskie,	Pole,	Miner,	35	M.	1	3	Gilberton,	Schuylkill,	Killed. A piece of slate fell on him.
March	13	William Heckman,	Dutch,	Laborer,	19	S.	....	....	Park No. 2,	Schuylkill,	Killed. Caught in machinery.
	16	Frank Antonovitch,	Pole,	Miner,	40	M.	1	2	Ellangowan,	Schuylkill,	Killed by fall of slate.
	18	John Scubia,	Russian,	Laborer,	35	M.	1	2	Honey Brook No. 5,	Schuylkill,	Killed by runaway car.

TABLE IV—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
April	1	Daniel Boyle,	Irish,	Miner,	50	M.	1	7	Audenreid,	Schuylkill,	Killed by fall of coal.
	15	Neal Flynn,	American,	Driver,	16	S.	....	....	Suffolk,	Schuylkill,	Head crushed between car and timber. Died 17th.
	17	Geo. Gaffney,	American,	Track man,	21	S.	....	....	Packer No. 5,	Schuylkill,	Killed. Fell down counter schute.
	27	John Kozilskey,	Pole,	Miner,	28	S.	....	....	Knickerbocker,	Schuylkill,	Burned. Shot exploded.
May	2	William Donsavage,	Pole,	Miner,	23	S.	....	....	Kehley's Run,	Schuylkill,	Killed by fall of top.
	2	Isaac Eisenhower,	American,	Miner,	48	M.	1	8	Kehley's Run,	Schuylkill,	Killed by fall of top.
	14	James Dumbrusky,	Pole,	Laborer,	24	S.	....	....	North Mahanoy,	Schuylkill,	Killed by a slip of coal falling off the rib.
	20	Samuel Klingeman,	American,	Driver boss,	36	M.	1	5	Silver Brook,	Schuylkill,	Killed. Drowned by an inrush of water in an abandoned breast.
	20	Frederick O'Donnell,	American,	Driver,	23	S.	....	....	Silver Brook,	Schuylkill,	
	20	Alexander Gallagher,	American,	Laborer,	22	S.	....	....	Silver Brook,	Schuylkill,	
June	20	John Zick,	Pole,	Miner,	43	M.	1	....	Shenandoah City,	Schuylkill,	Killed by fall of coal.
	24	John Strenkofsky,	Pole,	Miner,	34	M.	1	1	Vulcan,	Schuylkill,	Killed. Premature explosion.
	25	Sam. Stevens,	American,	Driver,	18	S.	....	....	Maple Hill,	Schuylkill,	Fatally injured by cars crushing him against platform. Died 26th.
July	17	William Seymour,	English,	Miner,	35	M.	1	4	North Mahanoy,	Schuylkill,	Leg broken and head cut by fall of coal. Died 21st.
	18	Ant Creekford,	Pole,	Miner,	26	M.	1	1	Maple Hill,	Schuylkill,	Killed. Smothered by gas.
	18	Jno. Gilcofskey,	Pole,	Miner,	28	M.	1	2	Maple Hill,	Schuylkill,	Killed. Smothered by gas.
Aug.	5	Jno. Goodulis,	Pole,	Miner,	35	M.	1	....	Packer No. 5,	Schuylkill,	Fatally burned by gas. Died 29th.
	8	John Fox,	American,	Loader boss,	25	S.	....	....	Turkey Run,	Schuylkill,	Leg broken and other injuries. Run over by wagon. Died 9th.
	12	John Gustilas,	Pole,	Miner,	26	S.	....	....	St. Nicholas,	Schuylkill,	Killed. Battery gave out and caught him.
	20	Martin Franknum,	Pole,	Miner,	25	S.	....	....	Turkey Run,	Schuylkill,	Killed by a fall of coal.
	30	James McCormick,	Irish,	Door boy,	14	S.	....	....	Kohinoor,	Schuylkill,	Killed while being hoisted up the shaft; fell down shaft.
Sept.	5	Frank Chapler,	Pole,	Laborer,	23	S.	....	....	Ellangowan,	Schuylkill,	Killed b yfall of slate.
	7	Stan Petrufskie,	Lithuanian,	Laborer,	32	M.	1	....	Buck Mountain,	Schuylkill,	Killed by a rush of rock.
	7	Dalplas Perino,	Tyrolean,	Miner,	28	S.	....	....	Buck Mountain,	Schuylkill,	Killed by a rush of rock.
	14	Patrick Ferry,	Irish,	Miner,	36	S.	....	....	Honey Brook,	Schuylkill,	Killed by fall of top coal.
	27	Isaac James,	American,	Headman,	35	M.	1	3	Packer No. 4,	Schuylkill,	Killed by fall of top slate.
	27	Enoch Sobuts,	Pole,	Laborer,	25	S.	....	....	Ellengowan,	Schuylkill,	Killed by fall of coal.
Oct.	1	Patrick Foley,	Irish,	Repair man,	58	M.	1	4	Indian Ridge,	Schuylkill,	Killed; burned by gas.

	2	Frank Ross,	Italian,	Laborer,	22	S.	....	....	Schuylkill No. 1 washery,	Schuylkill,	Killed by fall of dirt bank.
	2	Neil DeGreeko,	Italian,	Laborer,	32	M.	1	3	Schuylkill No. 1 washery,	Schuylkill,	Killed by fall of dirt bank.
	2	Herman Grero,	Italian,	Laborer,	22	M.	1	1	Schuylkill No. 1 washery,	Schuylkill,	Killed by fall of dirt bank.
	2	Andrew Mishock,	Pole,	Miner,	22	M.	1	1	Vulcan,	Schuylkill,	Killed by fall of clod.
	3	John Conoghan,	Irish,	Miner,	45	S.	....	....	Draper	Schuylkill,	Killed by fall of top.
	4	George Graboskie,	Pole,	Miner,	35	M.	1	3	Gilberton,	Schuylkill,	Killed by fall of coal.
	8	Ludwick Kaporick,	Pole,	Miner,	34	M.	1	3	Shenandoah City,	Schuylkill,	Killed by trip of cars.
	16	Adam Silvic,	Pole,	Miner,	27	M.	1	3	Gilberton,	Schuylkill,	Killed by rush of coal.
	18	John Fogerty,	American,	Breaker oiler,	18	S.	....	....	Packer No. 4,	Schuylkill,	Fatally injured; leg torn off and body bruised by machinery. Died on 19th.
	21	Joseph Roscavage,	Pole,	Laborer,	21	S.	....	....	Packer No. 5,	Schuylkill,	Killed by fall of top.
	24	James O'Connor,	Irish,	Conductor,	19	S.	....	....	St. Nicholas,	Schuylkill,	Killed by cave-in of mine breast.
	24	John Pinkus,	Pole,	Laborer,	30	M.	1	1	Primrose,	Schuylkill,	Killed by a piece of coal.
	31	Joseph Coclimsky,	Pole,	Miner,	34	M.	1	....	Tunnel Ridge,	Schuylkill,	Killed by a fall of coal.
Aug.	2	Edward Reed,	English,	Miner,	58	M.	1	....	North Mahanoy,	Schuylkill,	Killed by a fall of coal.
Nov.	7	Patrick Donahue,	American,	Miner,	45	M.	1	7	Knickerbocker,	Schuylkill,	Fatally injured; fell down manway. Died same day.
	9	Peter Putseweir,	Lithuanian,	Laborer,	21	S.	....	....	William Penn,	Schuylkill,	Killed. Fell down slope.
	23	William Deem,	American,	Shaker tender,	17	S.	....	....	North Mahanoy,	Schuylkill,	Fatally injured; caught in the elevator. Died on 24th.
	26	Adolph Govenus,	Pole,	Miner,	26	S.	....	....	Maple Hill,	Schuylkill,	Fatally injured. Face and hands burned by powder. Died 3d December.
Dec.	2	Joseph Polabinskie,	Pole,	Miner,	33	M.	1	....	Gilberton,	Schuylkill,	Fatally injured by fall of slate. Died th esame night.
	3	John Crag,	American,	Loco. helper,	21	S.	....	....	Packer No. 4,	Schuylkill,	Fatally injured by cars. Died same night.
	4	Micle Mugnoskie,	Slav,	Miner,	40	M.	1	3	Maple Hill,	Schuylkill,	Fatally injured by fall of slate. Died same night.
	4	Joseph Washslefskie,	Pole,	Laborer,	30	M.	1	2	Audenreid No. 4,	Schuylkill,	Killed by fall of clod.
	5	Harry Geary,	English,	Slope repairm'n	58	W.	....	2	Turkey Run,	Schuylkill,	Killed by a car.
	6	Mich. Litna,	Lithuanian,	Miner,	29	S.	....	....	West Shenandoah,	Schuylkill,	Fatally burned by powder. Died 13th.
	7	John Abraham,	Lithuanian,	Laborer,	26	S.	....	....	Mahanoy City,	Schuylkill,	Fatally injured by explosion of dynamite. Died same day.
	7	Ant Bainbridge,	English,	Laborer,	45	S.	....	....	Buck Mountain,	Schuylkill,	Killed by fall of coal.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Sixth Anthracite District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	16	Jos. Ratckis,	Pole,	Loader,	20	S.	Boston Run,	Schuylkill,	Ankle fractured by fall of slate.
	17	Geo. Egerton,	English,	Laborer,	50	M.	North Mahanoy,	Schuylkill,	Leg broken by a piece of slate.
	17	John Sobitsky,	Pole,	Miner,	56	M.	Park No. 2,	Schuylkill,	Laceration of scalp and fracture of leg by fall of coal.
	23	Simon Lucknavage,	Pole,	Laborer,	27	S.	Boston Run,	Schuylkill,	Hand blown off. Dynamite exploded.
	24	Steve Casper,	Pole,	Miner,	34	S.	Packer No. 5,	Schuylkill,	Bruised by fall of coal.
	24	Louis Vitenfsky,	Pole,	Miner,	40	M.	Packer No. 3,	Schuylkill,	Back injured; fall of slate.
	26	Matt Boxnitsky,	Lithuanian,	Miner,	29	M.	Knickerbocker,	Schuylkill,	Skull fractured; struck by flying coal.
	31	Thos. Doyle,	American,	Starter,	25	S.	Knickerbocker,	Schuylkill,	Arm broken by fall of coal.
	31	John Lutskus,	Pole,	Miner,	25	M.	Packer No. 3,	Schuylkill,	Leg broken by fall of coal.
	31	John Pitchski,	Pole,	Laborer,	23	S.	Park No. 2,	Schuylkill,	Burned about the body; explosion of powder.
	31	Chas. Luncos,	Pole,	Miner,	30	S.	Tunnel Ridge,	Schuylkill,	Head and face cut by shot exploding.
	31	Arthy Vitchasevil,	Italian,	Miner,	30	S.	Primrose,	Schuylkill,	Bruised chest and shoulders by cars against rib.
	31	Ralph Lezon,	Italian,	Laborer,	24	S.	Primrose,	Schuylkill,	Ear and head lacerated by cars against rib.
Feb.	1	John Machius,	Lithuanian,	Miner,	28	S.	William Penn,	Schuylkill,	Contusion of chest and hip by fall of timber.
	5	Elmer Eisenhawer,	American,	Laborer,	21	S.	Maple Hill,	Schuylkill,	Seriously injured between cars.
	5	Adam Smith,	Hungarian,	Slate shoveler,	49	M.	Knickerhocker,	Schuylkill,	Hand injured; cap exploded.
	5	Robert Sneddon,	American,	Car loader,	21	S.	North Mahanoy,	Schuylkill,	Squeezed about the hips between car and breaker.
	6	Edward Flail,	American,	Machinist,	50	M.	Primrose,	Schuylkill,	Laceration of leg by bed plate of pump falling.
	11	Mike Sarpolas,	Lithuanian,	Miner,	57	M.	Turkey Run,	Schuylkill,	Leg fractured by car chain.
	12	Mat Perkins,	Welsh,	Contractor,	48	M.	Indian Ridge,	Schuylkill,	Bruised on head and arms by fall of coal.
	12	John Jones,	Welsh,	Contractor,	45	M.	Indian Ridge,	Schuylkill,	Bruised about back and head by fall of coal.
	13	Stiney Pachules,	Pole,	Miner,	30	M.	Knickerbocker,	Schuylkill,	Burned by gas.
	18	Thomas Connors,	Irish,	Carpenter,	35	M.	Packer No. 2,	Schuylkill,	Fractured arm; fell from a scaffold.
	19	Harry Trackum,	Pole,	Miner,	28	S.	Maple Hill,	Schuylkill,	Burned by gas.
	19	William Severtisky,	Pole,	Miner,	35	M.	Maple Hill,	Schuylkill,	Burned by gas.
	19	Frank Gumbrovag,	Pole,	Miner,	30	S.	Maple Hill,	Schuylkill,	Burned by gas.
	21	John Subick,	Hungarian,	Miner,	40	....	North Mahanoy,	Schuylkill,	Leg broken by fall of coal.
	26	James Morgans,	Welsh,	Miner,	45	M.	St. Nicholas,	Schuylkill,	Burned by gas.
	26	Edward McCory,	Irish,	Miner,	46	M.	St. Nicholas,	Schuylkill,	Burned by gas.
	27	Mickle Whalen,	American,	Top man,	18	S.	Knickerbocker,	Schuylkill,	Arm lacerated; fell in front of car.
	27	Thomas Sincavage,	Pole,	Miner,	22	S.	Tunnel Ridge,	Schuylkill,	Leg broken by a fall of coal.
	28	Joseph Gilzscavage,	Pole,	Miner,	38	M.	St. Nicholas,	Schuylkill,	Hand blown off by dynamite.

March	1	William Andruchick,	Pole,	Laborer,	27	S.	Packer No. 3,	Schuylkill,	Burned by gas.
	1	Frank Alex,	Pole,	Miner,	40	S.	Packer No. 3,	Schuylkill,	Burned by gas.
	6	Albert Eisenhower,	American,	Laborer,	16	S.	Kehley's Run,	Schuylkill,	Leg hurt; struck by wagon.
	13	Harry McGuire,	American,	Machinist,	24	S.	Packer No. 3,	Schuylkill,	Burned about body and neck; he fell, became unconscious and his lamp ignited his clothes.
	13	Lewis Bencofskie,	Pole,	Miner,	33	S.	Ellangowan,	Schuylkill,	Hips and back bruised by fall of bone.
	21	Joseph Voznoutsky,	Pole,	Laborer,	21	S.	St. Nicholas,	Schuylkill,	Leg broken by fall of coal.
	25	Joseph Savits,	Pole,	Miner,	32	M.	Ellangowan	Schuylkill,	Thigh and back bruised by fall of coal.
	25	Thomas Slevin,	American,	Driver,	24	S.	Honey Brook,	Schuylkill,	Leg broken by fall of scaffolding.
	26	Robert Foreman,	German,	Laborer,	24	S.	Kohinoor,	Schuylkill,	Arm lacerated in cage.
	31	John Brown,	American,	Asst. foreman,	38	S.	Packer No. 5,	Schuylkill,	Scalded about head and body by hot water from boiler.
April	1	Frank Gallagher,	American,	Miner,	35	S.	Packer No. 5,	Schuylkill,	Burned by gas.
	1	Pat. Honey,	American,	Miner,	38	S.	Packer No. 5,	Schuylkill,	Burned by gas.
	2	Ralph Coxdist,	Pole,	Miner,	22	....	Buck Mountain,	Schuylkill,	Burned by powder.
	15	Morgan Powell,	American,	Slate picker,	17	S.	Indian Ridge,	Schuylkill,	Wrist and nose broken by a fall.
	17	John Jinutus,	Pole,	Miner,	23	S.	Suffolk,	Schuylkill,	Head hurt by fall of clod.
	19	Charles Lindemaith,	American,	Driver,	18	S.	Turkey Run,	Schuylkill,	Severely injured; fell under locomotive.
	23	George Metunes,	Pole,	Miner,	45	M.	Tunnel Ridge,	Schuylkill,	Head and face cut; shot exploded.
	24	Thomas Bambridge,	English,	Laborer,	22	....	Park No. 2,	Schuylkill,	Foot cut and bruised by fall of coal.
	25	Harry Rowland,	Welsh,	Miner,	48	M.	William Penn,	Schuylkill,	Arm and back lacerated by a premature explosion.
May	1	William Rogales,	Pole,	Miner,	31	M.	Tunnel Ridge,	Schuylkill,	Burned by gas.
	1	Joseph Gudtites,	Pole,	Miner,	26	M.	Tunnel Ridge,	Schuylkill,	Burned by gas.
	3	Max Fedovcheck,	Austrian,	Miner,	27	S	Kohinoor,	Schuylkill,	Lacerated head and back by fall of coal.
	7	Frank Albert,	Pole,	Miner,	25	M.	Maple Hill,	Schuylkill,	Face and hands burned by gas.
	9	Charles Koch,	American,	Oiler,	21	S.	Packer No. 2,	Schuylkill,	Arm broken by machinery.
	9	Mich. Hanoshick,	Hungarian,	Miner,	29	M.	Oneida,	Schuylkill,	Foot mashed by fall of coal.
	16	John Conscions,	Lithuanian,	Miner,	23	S.	Draper,	Schuylkill,	Burned by explosion of gas.
	16	James Welsh,	Irish,	Miner,	46	M.	Draper,	Schuylkill,	Injured by premature blast.
	17	William Jackiowick,	Pole,	Miner,	24	M.	Suffolk,	Schuylkill,	Bruised on the head and leg by falling down manway.
	20	Thomas McBreen,	American,	Miner,	47	M.	Tunnel Ridge,	Schuylkill,	Knee cap dislocated by fall of slate.
	20	Matt Chinsky,	Pole,	Laborer,	40	S.	St. Nicholas,	Schuylkill,	Slightly burned by gas.
	21	Frank Arnet,	Pole,	Miner,	40	M.	Maple Hill,	Schuylkill,	Head and face badly cut; shot exploded.
	31	George Sucklusky,	Pole,	Miner,	40	M.	Packer No. 4,	Schuylkill,	Scalp wound and broken leg by fall of coal.
June	1	Alex. Stiney,	Pole,	Laborer,	26	S.	Shenadoah City,	Schuylkill,	Head and back cut by fall of coal.
	1	Syl. Monitavich,	Pole,	Miner,	38	W.	Suffolk,	Schuylkill,	Head cut by fall of coal.
	3	James McHale,	American,	Door boy,	15	S.	Turkey Run,	Schuylkill,	Arm broken; fell in tunnel.
	5	John Venslavage,	Pole,	Loader,	34	M.	Suffolk,	Schuylkill,	Head cut by fall of coal.
	7	Evan Crosnavage,	Russian,	Miner,	43	M.	Park No. 2,	Schuylkill,	Arm broken and severe lacerations by explosion of shot.
	8	John Tonisliek,	Pole,	Miner,	32	M.	Maple Hill,	Schuylkill,	Burned by gas.
	12	Michael Grady,	Irish,	Miner,	57	M.	Indian Ridge,	Schuylkill,	Back hurt by fall of coal.
	13	Pierce Sovitsky,	Pole,	Miner,	28	S.	St. Nicholas,	Schuylkill,	Hands and side burned; explosion of powder.
	14	John Sneddon,	American,	Loader boss,	36	M.	Turkey Run,	Schuylkill,	Hip dislocated; fell under cars.
	19	Simon Fritz,	Pole,	Miner,	35	S.	Park No. 2,	Schuylkill,	Toe cut off by fall of coal.
	20	Thomas Yacobulis,	Pole,	Miner,	29	S.	Tunnel Ridge,	Schuylkill,	Burned on hands and face by gas.
	20	John Wasslusky,	Pole,	Laborer,	25	S.	Tunnel Ridge,	Schuylkill,	Burned on hands and face by gas.
	20	John Unclavage,	Pole,	Loader,	21	S.	Tunnel Ridge,	Schuylkill,	Burned on hands and face by gas.
	20	Andrew Bubulus,	Pole,	Miner,	50	M.	St. Nicholas,	Schuylkill,	Back injured by fall of top coal.
	22	Mike Daruseck,	Pole,	Miner,	33	M.	Ellangowan,	Schuylkill,	Face and hands burned by gas.
	22	Stine Yancuskie,	Pole,	Miner,	35	S.	Ellangowan,	Schuylkill,	Face and hands burned by gas.

TABLE V—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
July	26	Charles Polasky, ...	Pole, ...	Miner, ...	45	M.	Packer No. 2, ...	Schuylkill,....	Leg broken by fall of coal.
	28	Ad. Berules, ...	Pole, ...	Miner, ...	26	M.	Maple Hill, ...	Schuylkill,....	Leg fractured; buggy'' fell on him.
	12	John Busch, ...	American, .	Driver, ...	20	S.	Indian Ridge, ...	Schuylkill,....	Leg broken by car.
	12	Joe Gondarda, ...	Pole, ...	Miner, ...	28	S.	Suffolk, ...	Schuylkill,....	Burned by gas.
	18	Andrew Switzer, ...	German, ...	Miner, ...	45	M.	Primrose, ...	Schuylkill,....	Shoulder dislocated by fall of coal.
	25	John Murphy, ...	American,	Laborer, ...	21	S.	Packer No. 4, ...	Schuylkill,....	Injured internally. He slipped and fell in breaker.
	31	Chas. Wilkitus, ...	Pole, ...	Miner, ...	23	S.	Knickerbocker, ...	Schuylkill,....	Back and side seriously injured by fall of top coal.
Aug.	5	Michael Toomey, ...	American, .	Laborer, ...	23	S.	Cambridge, ...	Schuylkill,....	Concussion of brain, chest and abdomen by fall of top coal.
	5	Mike Ryan, ...	Irish, ...	Miner, ...	55	M.	Packer No. 5, ...	Schuylkill,....	Burned about hands and face by gas.
	6	Wash Rugick, ...	Pole, ...	Rockman, ...	50	M.	Packer No. 3, ...	Schuylkill,....	Squeezed about body; caught between car and building.
	7	Alex. Donaldson, ...	American, .	Miner, ...	26	S.	Packer No. 4, ...	Schuylkill,....	Back hurt by top coal.
	8	Simon Noxitsky, ...	Pole, ...	Loader, ...	40	S.	Packer No. 3, ...	Schuylkill,....	Squeezed about the body; caught between cars and timber.
	16	Frank Thiscavage, .	Pole, ...	Miner, ...	29	M.	Ellangowan, ...	Schuylkill,....	Face, hands and body burned by powder.
	19	John Powell, ...	Welsh, ...	Loader, ...	30	M.	Tunnel Ridge, ...	Schuylkill,....	Hurt about hands and side; ignited dynamite.
	21	Charles Yerlott, ...	German, ...	Miner, ...	48	M.	Vulcan, ...	Schuylkill,....	Burned on hands by gas.
	21	Joseph Kronk, ...	Lithuanian,	Miner, ...	40	S.	Vulcan, ...	Schuylkill,....	Burned on hands by gas.
	21	Patrick Burk, ...	American, ..	Driver, ...	19	S.	Packer No. 2, ...	Schuylkill,....	Hands crushed between bumpers.
	28	Abe Fitzwilliams, ...	Welsh, ...	Miner, ...	44	M.	Indian Ridge, ...	Schuylkill,....	Crushed by fall of slate.
	28	John McIntyre, ...	American, .	Driver, ...	25	S.	Packer No. 5, ...	Schuylkill,....	Injured about body; caught between car and rock.
Sept.	4	Anty Martle, ...	Pole, ...	Miner, ...	30	M.	Ellangowan, ...	Schuylkill,....	Rib fractured; caught between car and schute.
	12	Mich. Dumbrofski, ..	Pole, ...	Laborer, ...	32	S.	Suffolk, ...	Schuylkill,....	Bruised about the body; fall of slate.
	27	Charles Lewis, ...	American,	Driver, ...	21	S.	Packer No. 4, ...	Schuylkill,....	Injured by fall of slate.
	27	Jerry Mahoney, ...	Welsh, ...	Timberer, ...	38	M.	Packer No. 4, ...	Schuylkill,....	Injured by fall of slate.
	27	John Hefner, ...	American, .	Miner, ...	26	S.	Ellangowan, ...	Schuylkill,....	Head and leg injured by fall of coal.
Oct.	2	Anthy Micklasosky, .	Lithuanian,	Miner, ...	40	M.	Turkey Run, ...	Schuylkill,....	Hip injured by fall of rock.
	3	Joseph Moenofskie, .	Lithuanian,	Miner, ...	35	M.	Draper, ...	Schuylkill,....	Injured by fall of top.
	7	John Pollonf, ...	Russian, ...	Laborer, ...	38	M.	Bear Ridge, ...	Schuylkill,....	All of his ribs broken on one side; stepped off car.
	9	Lik. Richerson, ...	American, .	Starter, ...	23	M.	Kehley's Run, ...	Schuylkill,....	Injured by explosion of a cap.
	11	William Butler, ...	American, .	Miner, ...	42	M.	Audenreid, ...	Schuylkill,....	Leg broken by fall of slate.

	15	Albert Gruleskie,	Pole,	Laborer,	35	S.	Park No. 2,	Schuylkill,	Thigh broken by fall of coal.
	17	David Walters,	Welsh,	Miner,	50	M.	Honey Brook No. 5,	Schuylkill,	Leg fractured and back injured by fall of bone.
	17	Frank Friday,	Pole,	Miner,	35	S.	Packer No. 2,	Schuylkill,	Leg and arm broken by fall of coal.
	21	Lewis Zigler,	Hungarian,	Miner,	28	M.	Mahanoy City,	Schuylkill,	Leg broken by rush of coal.
	24	Geo. Davies,	Welsh,	Miner,	49	M.	Gilberton,	Schuylkill,	Burned by explosion of gas.
	24	Job Davies,	Welsh,	Laborer,	23	S.	Gilberton,	Schuylkill,	Burned by explosion of gas.
	24	William Bradley,	American,	Laborer,	22	S.	Gilberton,	Schuylkill,	Burned by explosion of gas.
	26	Melt Raudenbush,	American,	Slate picker,	15	S.	Ellangowan,	Schuylkill,	Foot injured; foot caught between wheel and pedestals.
	30	Edward Roberts,	American,	Laborer,	18	S.	William Penn,	Schuylkill,	Compound fracture of arm; fell under car.
Nov.	2	John Ambrose,	Pole,	Miner,	33	M.	Packer No. 5,	Schuylkill,	Bruised and cut; explosion of shot.
	6	Emil Haas,	German,	Miner,	40	M.	North Mahanoy,	Schuylkill,	Leg broken and back bruised; fall of coal.
	6	Sam Reynolds,	English,	Laborer,	45	M.	Tunnel Ridge,	Schuylkill,	Three ribs broken; sprag fell down slope.
	7	Mathew Bordollis,	Pole,	Miner,	35	S.	North Mahanoy,	Schuylkill,	Back hurt and hand cut; fall of coal.
	7	Robert Marshall,	Pole,	Miner,	28	M.	Knickerbocker,	Schuylkill,	Injured about body; fell down manway.
	12	Martin Coyle,	American,	Plane tender,	26	S.	Packer No. 4,	Schuylkill,	Bruised; caught by dumper.
	12	Frank Swelk,	Lithuanian,	Miner,	37	S.	Vulcan,	Schuylkill,	Injured internally; fell 15 feet in manway.
	15	Thomas Williams,	American,	Laborer,	27	M.	Knickerbocker,	Schuylkill,	Leg broken; foot caught in rail.
	16	Frank Fry,	American,	Jig boss,	23	M.	Packer No. 4,	Schuylkill,	Arm broken; caught in sprocket wheel.
	18	Mike Boris,	Hungarian,	Miner,	45	M.	Oneida,	Schuylkill,	Cut on head; charge exploded.
	18	William Lutis,	Pole,	Miner,	30	S.	Indian Ridge,	Schuylkill,	Cut and bruised; explosion of dynamite.
	18	Joseph Schensefskie,	Pole,	Laborer,	23	S.	Indian Ridge,	Schuylkill,	Slightly bruised; explosion of dynamite.
	19	Harry Toll,	American,	Miner,	36	M.	Packer No. 5,	Schuylkill,	Injured about the body; explosion of dynamite.
	20	Edward Garris,	American,	Miner,	25	M.	Knickerbocker,	Schuylkill,	Leg broken; caught by battery.
	22	Marshall Myers,	English,	Miner,	58	M.	West Shenandoah,	Schuylkill,	Head and body bruised by fall of rock.
	22	John Zuluskie,	Pole,	Miner,	30	M.	Suffolk,	Schuylkill,	Burned by gas.
Dec.	2	Peter Berchick,	Lithuanian,	Miner,	30	S.	Packer No. 2,	Schuylkill,	Burned by gas.
	2	William Noon,	Irish,	Miner,	45	M.	Packer No. 2,	Schuylkill,	Burned by gas.
	4	Dommick Pasam,	Italian,	Plane man,	35	M.	Packer No. 4,	Schuylkill,	Arm broken; fell down steps.
	4	Mike Gawillick,	Pole,	Plane man,	46	S.	Boston Run,	Schuylkill,	Leg broken by fall of rock.
	6	Felix Shelshick,	Pole,	Miner,	26	S.	Knickerbocker,	Schuylkill,	Burned by explosion of powder.
	6	John Bowser,	Lithuanian,	Miner,	33	S.	West Shenadoah,	Schuylkill,	Burned by powder.
	9	Enoch McClusky,	Pole,	Miner,	30	S.	Boston Run,	Schuylkill,	Hands and face slightly burned by explosion of gas.
	11	William Skinkus,	Russian,	Miner,	29	S.	Packer No. 3,	Schuylkill,	Leg broken by fall of rock.
	11	Al. Seddon,	American,	Miner,	33	M.	Tunnel Ridge,	Schuylkill,	Burned by explosion of gas.
	14	William Chalmars,	Scotch,	Machinist,	24	M.	Schuylkill No. 1 washery,	Schuylkill,	Ankle broken; pump fell on his leg.

Seventh Anthracite District.

NORTHUMBERLAND, COLUMBIA, SCHUYLKILL AND DAUPHIN COUNTIES.

Shamokin, Pa., March 8, 1902.

Hon. James W. Latta, Secretary of Internal Affairs, Harrisburg, Pa.:

Sir: I have the honor of herewith submitting to you my annual report as Inspector of Coal Mines for the Seventh Anthracite District for the year 1901.

There were 7,052,828 tons of coal produced, as against 6,070,701 tons in 1900, being an increase of 98,127 tons over that of the preceding year.

The shipments were 6,145,402 tons, an increase of 880,849 tons.

The number of fatal accidents was sixty-two, an increase of thirteen over that of 1900.

There were ninety-five non-fatal accidents, an increase of four over the number for last year.

The average number of tons of coal produced per life lost was 113,755.

The average number of tons of coal produced per accident was 44,922.

The average number of tons produced per employe was 355.41.

Yours very respectfully,
EDWARD BRENNAN,
Inspector of Mines.

Remarks on Mine Accidents.

The excellent provisions made by our Commonwealth to protect Anthracite miners, should lessen the dangers of this calling. But it must be borne in mind that new conditions in mining have occurred, as working the coal at great depths and over large territory, subject to greater pressure and steeper pitches, with larger bodies of gas. Too meet the increased dangers thus produced, great care upon the part of the managements will be required.

In looking over the casualties for 1901, in my district, I feel justified in saying that at least fifty per cent. were the result of ignorance and carelessness. If the law of 1885 were fully lived up to by the employes, one-half of thes accidents would not have occurred. What remedy have we to reduce the number? It seems to me that the remedy is a stricter enforcement of the rules of the mines as regards the use of safety lamps, the security of the top by necessary timber, greater care in ascending and descending shafts, greater care in putting off blasts, the careful handling of explosives, etc.

Those having the oversight authority in the mines should have all rules carried out by their men, and any one refusing to obey the rules should suffer a discharge, for it is not right that one careless or disobedient miner should imperil the lives of his fellow workmen. Good rules rigidly enforced in the mines will most certainly reduce the number of accidents.

Examination of Applicants for Mine Foreman Certificates.

The annual examination of applicants for mine foreman certificates in the Seventh anthracite district was held at Pottsville, June 5th and 6th, 1901, before the following board, viz: Edward Brennan, Mine Inspector, Shamokin; Andrew Robertson, coal operator, Pottsville; Jacob Fleming, miner, Excelsior, and Joseph Corbe, miner, Ashland.

The following were recommended to receive certificates:

Mine Foreman.

Henry Perong, Girardville.
Peter Bodmann, Locust Dale.
James O'Neal, Mount Carmel.
David E. Stine, Mount Carmel.
Nicholas S. Brokenshire, Mount Carmel.
Thomas B. Davis, Mount Carmel.
William E. Jones, Williamstown.
Peter Naylor, Treverton.
Thomas J. Joyce, Locust Gap.

Assistant Foreman.

William E. Manney, Mount Carmel.
Morton Lamb, Centralia.
Albert Clews, Centralia.
Thomas A. McNamara, Williamstown.
David D. Jones, Williamstown.
James O'Connor, Shamokin.
James O'Rourke, Trevorton.

TABLE A—Showing the Total Production of Coal, the Number of Persons Employed by Each Company During the Year 1901, and the Average Number of Tons Produced per Each Employe.

Names of Companies.	Number of tons produced.	Number of persons employed.
Philadelphia and Reading Coal and Iron Company,	2,618,382.14	6,956
Lehigh Valley Coal Company,	299,778.09	831
The Union Coal Company,	1,007,328.18	3,372
Mineral Railroad and Mining Company,	786,096.00	2,228
Summit Branch and Lykens Valley Coal Companies,	741,582.10	2,353
Excelsior Coal Company,	162,273.04	392
T. M. Righter & Company,	188,606.06	336
Shamokin Coal Company,	295,598.09	962
Enterprise Coal Company,	216,288.00	553
Shipman Koal Company,	73,668.09	300
Seneca Coal Company,	51,050.16	206
White & White,	56,697.11	203
Royal Oak Coal Company,	47,250.00	183
Greenough Red Ash Coal Company,	61,598.00	241
Midvalley Coal Company,	446,628.18	728
Total,	7,052,828.04	19,844

Average number of tons produced per employe, 355.41.

TABLE B—Number of Fatal Accidents and Tons of Coal Produced per Life Lost.

Names of Companies.	Number of fatal accidents.	Number of tons of coal produced per life lost.
Philadelphia and Reading Coal and Iron Company,	20	130,919
Lehigh Valley Coal Company,	1	299,778
The Union Coal Company,	12	83,944
Mineral Railroad and Mining Company,	4	196,524
Summit Branch and Lykens Valley Coal Companies,	10	74,158
Excelsior Coal Company,	1	162,273
T. M. Righter & Company,	....	188,606
Shamokin Coal Company,	3	98,533
Enterprise Coal Company,	2	108,144
Shipman Koal Company,	2	36,834
Seneca Coal Company,	2	25,525
White & White,	....	56,698
Royal Oak Coal Company,	2	23,625
Greenough Red Ash Coal Company,	1	61,598
Midvalley Coal Company,	2	223,314
Total,	62	1,770,473

TABLE C—Number of Fatal and Non-Fatal Accidents and Number of Tons of Coal Produced per Accident.

Names of Companies.	Number of accidents.	Number of tons of coal produced per accident.
Philadelphia and Reading Coal and Iron Company,	44	59.508
Lehigh Valley Coal Company,	10	29,977
The Union Coal Company,	31	32.494
Mineral Railroad and Mining Company,	16	49,131
Summit Branch and Lykens Valley Coal Companies,	20	37,079
Excelsior Coal Company,	3	54.091
T. M. Righter & Company,	7	26,943
Shamokin Coal Company,	7	42,228
Enterprise Coal Company,	3	72,096
Shipman Koal Company,	4	18.417
Seneca Coal Company,	6	8.508
White & White,	....	56,697
Royal Oak Coal Company,	2	23,625
Greenough Red Ash Coal Company,	1	61.598
Midvalley Coal Company,	3	148.876
Total,	157	....

TABLE D—Classification of Accidents.

	Killed or fatally injured.	Injured.	Total.
Falls of coal, rock and roof,	26	31	57
Smothered by gas,	2	....	2
Explosions of gas,	1	12	13
Falling down manways, breasts and slopes,	4	3	7
Explosions of blasts,	5	12	17
Cars, inside,	6	11	17
Cars, outside,	2	4	6
Miscellaneous, inside,	6	8	14
Miscellaneous, outside,	10	14	24
Total,	62	95	157

TABLE E—Occupations of Persons Killed and Injured.

	Killed or fatally injured.	Injured.	Total.
Miners,	35	44	79
Laborers,	17	29	46
Drivers,	3	11	14
Repair men,	1	1	2
Top man,	....	1	1
Locomotive engineer,	....	1	1
Slate pickers,	3	4	7
Fire bosses,	1	....	1
Loader,	....	1	1
Spraggers,	....	1	1
Car loader,	2	2	4
Total,	62	95	157

TABLE F—Nationalities of Persons Killed or Injured.

	American.	English.	Welsh.	Irish.	German.	Poles.	Slav.	Austrian.	Hungarian.	Italian.	Russian.	Lithuanian.	Greek.	Total.
Killed,	26	....	1	4	4	13	2	2	2	1	4	3	....	62
Injured,	41	3	4	3	3	24	3	3	4	2	2	2	1	95
Total,	67	3	5	7	7	37	5	5	6	3	6	5	1	157

Accidents for Past Five Years in Seventh District.

	Fatal.	Non-fatal.	Total accidents.
1897,	46	119	165
1898,	46	112	158
1899,	52	90	142
1900,	49	91	140
1901,	62	95	157
Total,	255	507	762
Average,	51	101	152

Coal Production for Past Five Years in Seventh District.

	Coal shipped.	Used at collieries and local sales.	Total production.
1897,	4,377,761	731,187	5,108,948
1898,	4,331,093	743,741	5,074,834
1899,	5,456,091	852,243	6,308,334
1900,	5,264,553	806,148	6,070,701
1901,	6,145,402	907,426	7,052,828
Total,	25,574,900	4,040,745	29,615,645
Average,	5,114,980	808,149	5,923,129

TABLE I—Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Seventh Anthracite District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Phila. & Reading Coal & Iron. Co.						
Burnside,	Northumberland,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Bear Valley,	Northumberland,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Henry Clay,	Northumberland,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Big Mountain,	Northumberland,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Stirling,	Northumberland,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
North Franklin,	Northumberland,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Alaska,	Northumberland,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Reliance,	Northumberland,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Locust Gap,	Northumberland,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Locust Spring,	Northumberland,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Locust Spring washery,	Northumberland,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Merriam,	Northumberland,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Potts,	Columbia,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Bast,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Preston No. 3,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia and Reading.
Lehigh Valley Coal Co.						
Centralia,	Columbia,	S. D. Warriner,	Wilkes-Barre,	R. S. Mercur,	Centralia,	Lehigh Valley Railway.
Logan,*	Columbia,	S. D. Warriner,	Wilkes-Barre,	R. S. Mercur,	Centralia,	Lehigh Valley Railway.
Continental,*	Columbia,	S. D. Warriner,	Wilkes-Barre,	R. S. Mercur,	Centralia,	Lehigh Valley Railway.
Big Mine Run,*	Schuylkill,	S. D. Warriner,	Wilkes-Barre,	R. S. Mercur,	Centralia,	Lehigh Valley Railway.
Locust Run,†	Columbia,	S. D. Warriner,	Wilkes-Barre,	R. S. Mercur,	Centralia,	Lehigh Valley Railway.
The Union Coal Co.						
Pennsylvania,	Northumberland,	Morris Williams,	Wilkes-Barre,	Wm. R. Reinhardt,	Shamokin,	Pennsylvania R. R. (N.C.)
Hickory Swamp,	Northumberland,	Morris Williams,	Wilkes-Barre,	Wm. R. Reinhardt,	Shamokin,	Pennsylvania R. R. (N.C.)
Hickory Ridge,	Northumberland,	Morris Williams,	Wilkes-Barre,	Wm. R. Reinhardt,	Shamokin,	Pennsylvania R. R. (N.C.)
Richards,	Northumberland,	Morris Williams,	Wilkes-Barre,	Wm. R. Reinhardt,	Shamokin,	Pennsylvania R. R. (N.C.)
Scott shaft,	Northumberland,	Morris Williams,	Wilkes-Barre,	Wm. R. Reinhardt,	Shamokin,	Pennsylvania R. R. (N.C.)
Mineral R. R. & Mining Co.						
Cameron,	Northumberland,	Morris Williams,	Wilkes-Barre,	Robert A. Quinn,	Shamokin,	Pennsylvania R. R. (N.C.)
Luke Fidler,	Northumberland,	Morris Williams,	Wilkes-Barre,	Robert A. Quinn,	Shamokin,	Pennsylvania R. R. (N.C.)
Summit Branch and Lykens Valley Coal Co.						
Williamstown,	Dauphin,	Morris Williams,	Wilkes-Barre,	Hood McKay,	Lykens,	Pennsylvania Railroad.
Short Mountain,	Dauphin,	Morris Williams,	Wilkes-Barre,	Hood McKay,	Lykens,	Pennsylvania Railroad.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Excelsior Coal Co.						
Excelsior,	Northumberland,	Andrew Robertson,	Shamokin,	A. D. Robertson,	Shamokin,	Pennsylvania Railroad.
Corbin,	Northumberland,	Andrew Robertson,	Shamokin,	Geo. W. Robertson,	Shamokin,	Philadelphia and Reading.
T. M. Righter & Co.						
Mt. Carmel,	Northumberland,	Thos. M. Righter,	Mt. Carmel,	Thos. M. Righter,	Mt. Carmel,	Lehigh Valley.
Shamokin Coal Co.						
Natalie,	Northumberland,	Henry Vincent,	Natalie,			Philadelphia and Reading.
Enterprise Coal Co.						
Enterprise,	Northumberland,	W. L. Connell,	Scranton,	W. L. Connell,	Scranton,	Philadelphia and Reading.
Shipman Koal Co.						
Colbert,	Northumberland,	E. J. Corliss,	Shamokin,			Pennsylvania Railroad.
White & White.						
Columbia No. 2,	Northumberland,	E. E. White,	Mt. Carmel,	E. E. White,	Mt. Carmel,	Lehigh Valley.
Royal Oak Coal Co.						
Royal Oak,	Northumberland,	Geo. P. Davis,	Shamokin,			Philadelphia and Reading.
Midvalley Coal Co.						
Midvalley No. 1,	Columbia,	Not working.				
Midvalley No. 2,	Columbia,			T. E. Snyder,	Wilburton,	Lehigh Valley.
Greenough Red Ash Coal Co.						
Greenough,	Northumberland,			G. C. Graeber,	Shamokin,	Pennsylvania R. R. (N.C.)
Seneca Coal Co.						
Sioux,	Northumberland,	S. D. Warriner,	Wilkes-Barre,	R. S. Mercur,	Centralia,	Lehigh Valley & Penna.

*Included in Centralia.

†Pumping Station.

TABLE II—Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Seventh Anthracite District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Phila. and Reading Coal and Iron Co.												
Burnside,	Northumberland,	262.584.12	38,326	5,054	305,964 12	230 3-20	778	4	3	6,867	19,278	129
Stirling,	Northumberland,	......	......	......	......	......	307	......	3	3,077	2,960½	......
Bear Valley,	Northumberland,	186,831.19	13,712	473	201,016.19	215 13-20	473	1	......	5,121	11,250	60
Henry Clay,	Northumberland,	143,465.12	29,973	12,044	185,482 12	146 4-20	433	1	1	1,843	4.145½	72
Big Mountain,	Northumberland,	......	......	......	......	......	148	......	1	1,876	4,612	......
North Franklin,	Northumberland,	255,238.18	23,529	5,258	284,025.18	227 13-20	526	2	1	4,885	15,186½	65
Alaska,	Northumberland,	248,892.09	16,283	164	265,339.09	226 16-20	740	1	2	8,367	10,394½	95
Reliance,	Northumberland,	202,695.09	18,235	9,241	230,171 09	218 3-20	580	3	2	7,526	7,589	56
Locust Gap,	Northumberland,	370,301.16	46,846	2,336	419,483 16	222 13-20	361	......	4	3,442	6,442	54
Locust Spring,	Northumberland,	......	......	......	......	......	849	2	4	4,428	24,561	79
Locust Spring washery,												
Merriam,	Northumberland,	......	11,155	......	11,155	......	16	......	......	......	......	......
Potts,	Columbia,	292,273.16	35,717	5,835	333,825.16	216 4-20	770	5	2	333	93.726	71
Bast,	Schuylkill,	174,930.06	31,138	3,838	209,906 06	212 8-20	559	1	1	637	34,766	70
Preston No. 3,	Schuylkill,	139,802.17	32,208	......	172,010.17	216 18-20	416	......	......	95	26,585¾	41
Total,	......	2,277,017.14	297,122	44,243	2,618,382.14	213 1-5	6,956	20	24	48,497	261,496¾	792
Lehigh Valley Coal Co.												
Centralia,	Columbia,	266,273.19	26,983	6,521.10	299,778.09	179 2-10	817	1	9	4,717	36,107½	90
Locust Run,	Columbia,	......	......	......	......	......	14	......	......	......	......	......
Total,	......	266,273.19	26,983	6,521.10	299,778.09	179 2-10	831	1	9	4,717	36,107½	90

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
The Union Coal Co.												
Pennsylvania,	Northumberland,	330,784.17	30,122	8,775.16	369,682.13	255 15-20	1,035	2	11	13,509	31,064	102
Hickory Swamp,	Northumberland,	114,915.19	8,071	1,081.11	124,068.10	220 7-20	492	2	......	2,090	5,668	52
Hickory Ridge,	Northumberland,	155,036.08	34,203	1,770.12	191,010.00	236 17-20	644	3	1	4,430	3,902	46
Richards,	Northumberland,	264,649.13	54,150	61	318,860.13	242 16-20	1,015	5	5	7,919	33,849	84
Scott,	Northumberland,	....	3,707.02	....	3,707.02	247	186	......	2	....	14,600	5
Total,	....	865,386.17	130,253.02	11,688.19	1,007,328.18	240½	3,372	12	19	27,948	89,083	289
Mineral Railroad and Mining Co.												
Cameron,	Northumberland,	461,386.02	38,874	16,272	516,532.02	267 3-10	1,428	4	11	13,712	36,378	138
Luke Fidler,	Northumberland,	230,217.05	27,633	11,713.13	269,563.18	238 9-10	800	......	1	7,436	21,078	61
Total,	....	691,603.07	66,507	27,985.13	786,096.00	253 1-10	2,228	4	12	21,148	57,456	199
Summit Branch and Lykens Valley Coal Co.												
Williamstown,	Dauphin,	251,265.02	109,030.02	7,985.07	368,280.11	215 3-10	1,161	6	9	5,149	34,900	110
Short Mountain,	Dauphin,	318,134.10	41,288.04	13,879.05	373,301.19	282¼	1,192	4	1	2,839	13,856	158
Total,	....	569,399.12	150,318.06	21,864.12	741,582.10	248¾	2,353	10	10	7,988	48,756	268
Excelsior Coal Co.												
Excelsior,	Northumberland,	101,820.10	4,050	457.13	106,328.03	214 9-10	194	......	......	2,070	500	32
Corbin,	Northumberland,	52,795.01	3,150	....	55,945.01	200 6-10	198	1	2	3,110	3,400	25
Total,	....	154,615.11	7,200	457.13	162,273.04	207¾	392	1	2	5,180	3,900	57
T. M. Righter & Co.												
Mt. Carmel,	Northumberland,	164,361.17	18,438	2,983.09	188,606.06	249	336	......	7	1,053	35,284	38

Shamokin Coal Co. Natalie,	Northumberland,	264,351	25,500	5,747.09	295,598.09	255 5-10	962	3	4	7,000	4,000	100
Enterprise Coal Co. Enterprise,	Northumberland,	203,210	12,672	406	216,288	203 7-10	553	2	1	8,232	6,125	62
Shipman Koal Co. Colbert,	Northumberland,	67,231.19	4,617	1,819.10	73,668.09	165½	300	2	2	2,945	5,200	23
White & White. Columbus No. 2,	Northumberland,	48,993.13	2,132	5,571.18	56,697.11	227 1-10	203	......	......	3,650	7,500	12
Royal Oak Coal Co. Royal Oak,	Northumberland,	40,775	3,500	2,975	47,250	186 6-10	183	2	......	1,800	1,000	12
Midvalley Coal Co. Midvalley Nos. 1 and 2,	Columbia,	433,869.02	10,750	2,009.16	446,628.18	261 9-10	728	2	1	7,324	95,604	84
Greenough Red Ash Coal Co. Greenough,	Northumberland,	58,473	3,000	125	61,598	229 8-10	241	1	......	1,945	6,275	7
Seneca Coal Co. Sioux,	Northumberland,	39,839.13	10,588	623.03	51,050.16	137 4-10	206	2	4	1,032	2,307	22
Grand total,		6,145,402	772,403	135,023	7,052,828	*216	19,844	62	95	150,459	660,094	2,055

*Average.

TABLE II— Continued.

Name of Operators.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	No. air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Phila. and Reading Coal and Iron Co., ...	Northumberland,	78	2,340	123	15,990	18,330	5	2	......	96	15,992	52	47,625	29,200	......	1
Lehigh Valley Coal Co., ...	Columbia,.........	15	500	16	2,500	3,000	2	......	......	41	6,970	4	1,700	1,700	......	......
The Union Coal Co., ...	Northumberland,	10	200	46	6,750	6,950	6	......	......	60	7,850	20	14,000	5,414	......	2
Mineral Railroad and Mining Co., ...	Northumberland,	6	120	31	3,970	4,090	4	......	......	34	6,176	11	4,738	4,738	1	3
Summit Branch and Lykens Valley Coal Co.	Dauphin,..........	108	5,280	35	6,945	12,225	9	......	3	62	6,012	13	10,282	6,878	2	2
Excelsior Coal Co., ...	Northumberland,	32	960	......	....	960	1	......	......	10	450	3	1,450	....	......	......
T. M. Righter & Co., ...	Northumberland,	20	600	4	600	1,200	2	......	......	42	1,345	5	3,500	3,500	......	......
Shamokin Coal Co., ...	Northumberland,	17	340	4	520	860	3	......	......	18	859	3	76,600	24,000	......	......
Enterprise Coal Co., ...	Northumberland,	......	....	12	1,500	1,500	......	......	3	7	1,084	3	2,220	2,220	2	......
Shipman Koal Co., ...	Northumberland,	5	27	3	90	405	......	......	......	7	505	2	1,296	800	......	......
White & White, ...	Northumberland,	4	120	......	....	120	......	......	......	6	107	....	....	....	......	......
Royal Oak Coal Co., ...	Northumberland,	......	....	2	120	....	1	......	......	4	210	1	....	....	......	......
Midvalley Coal Co., ...	Columbia.........	......	....	10	2,150	2,150	3	......	......	8	1,596	3	3,000	1,500	......	......
Greenough Red Ash Coal Co., ...	Northumberland,	......	....	3	225	225	......	......	......	3	100	1	....	....	......	......
Senaca Coal Co., ...	Northumberland,	......	....	2	500	500	......	......	......	11	270	2	900	500	......	......
Grand total, ...	....	295	10,487	291	39,860	52,515	36	2	3	413	49,526	123	166,711	80,450	5	8

TABLE III—Showing the number of each class of employes at each colliery in the Seventh Anthracite District during the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	Grand total, inside and outside.
P. & R. Coal and Iron Co.																	
Burnside,	Northumberland,	2	6	265	109	26	16	64	488	2	10	23	134	2	119	290	778
Bear Valley,	Northumberland,	1	2	175	36	16	9	74	313	1	5	12	74	1	67	160	473
Henry Clay,	Northumberland,	1	4	122	30	21	6	82	266	2	4	20	67	3	71	167	433
Big Mountain,	Northumberland,	2	2	69	17	7	....	30	127	1	2	9	....	....	9	21	148
Stirling,	Northumberland,	1	4	119	33	20	7	77	261	1	1	9	....	1	34	46	307
North Franklin,	Northumberland,	1	3	134	63	19	6	101	327	1	13	14	68	2	101	199	526
Alaska,	Northumberland,	2	4	272	47	55	17	104	501	1	12	27	101	3	95	239	740
Reliance,	Northumberland,	2	4	225	39	31	16	63	380	1	8	22	85	3	81	200	580
Locust Gap,	Northumberland,	1	3	188	33	18	6	112	361	....	....	....	....	....	....	....	361
Locust Spring,	Northumberland,	2	6	185	59	38	8	172	470	2	17	45	147	6	162	379	849
Merriam,	Northumberland,	....	....	....	....	....	....	2	2	1	....	5	....	....	8	14	16
Potts,	Columbia,	2	9	110	29	34	23	220	427	2	8	25	192	2	114	343	770
Bast,	Schuylkill,	2	9	67	20	27	32	184	341	1	6	20	86	2	103	218	559
Preston No. 3,	Schuylkill,	1	5	42	38	14	14	119	233	1	6	23	88	1	64	183	416
Total,	...	20	61	1,973	553	326	160	1,404	4.497	17	92	254	1,042	26	1,028	2,459	6.956
Lehigh Valley Coal Co.																	
Centralia,	Columbia,	5	2	217	75	48	2	138	487	3	17	23	60	3	224	330	817
Locust Run,	Columbia,	....	....	....	....	....	....	7	7	1	1	4	....	....	1	7	14
Total,	...	5	2	217	75	48	2	145	494	4	18	27	60	3	225	337	831

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
The Union Coal Co.																	
Pennsylvania,	Northumberland,	5	11	345	113	39	12	165	690	1	10	22	57	3	252	345	1,035
Hickory Swamp,	Northumberland,	2	3	107	75	16	6	83	292	1	5	10	61	2	121	200	492
Hickory Ridge,	Northumberland,	3	3	159	76	18	2	110	371	1	7	13	91	2	159	273	644
Richards,	Northumberland,	5	10	326	85	40	15	237	718	1	9	17	96	3	171	297	1,015
Scott,	Northumberland,	1	......	....	....	....	....	104	105	1	14	6	....	1	59	81	186
Total,	....	16	27	937	349	113	35	699	2,176	5	45	68	305	11	762	1,196	3,372
Mineral Railroad and Mining Co.																	
Cameron,	Northumberland,	7	16	529	180	80	22	194	1,028	2	17	28	230	3	120	400	1,428
Luke Fidler,	Northumberland,	3	9	268	95	40	6	101	522	1	10	24	95	4	144	278	800
Total,	....	10	25	797	275	120	28	295	1,550	3	27	52	325	7	264	678	2,228
Summit Branch and Lykens Valley Coal Co.																	
Williamstown,	Dauphin,	6	6	300	56	57	7	275	707	2	24	70	117	4	237	454	1,161
Short Mountain,	Dauphin,	6	6	300	145	114	23	261	855	2	19	40	106	5	165	337	1,192
Total,	....	12	12	600	201	171	30	536	1,562	4	43	110	223	9	402	791	2,353

Excelsior Coal Co.																	
Excelsior,	Northumberland,	3	......	39	42	9	1	17	111	2	5	3	29	1	43	83	194
Corbin,	Northumberland,	3	......	63	32	12	....	22	132	2	3	6	25	1	29	66	198
Total,	....	6	......	102	74	21	1	39	243	4	8	9	54	2	72	149	392
T. M. Righter & Co.																	
Mt. Carmel,	Northumberland,	1	2	38	30	8	5	49	133	2	4	9	68	4	116	203	336
Shamokin Coal Co.																	
Natalie,	Northumberland,	3	2	212	159	57	11	85	529	1	26	20	169	7	210	433	962
Enterprise Coal Co.																	
Enterprise,	Northumberland,	1	......	229	39	40	4	51	364	1	8	21	81	2	76	189	553
Shipman Koal Co.																	
Colbert,	Northumberland,	1	1	71	27	8	....	42	150	1	6	11	82	2	48	150	300
White & White.																	
Columbus No. 2,	Northumberland,	1	1	83	20	17	2	15	139	1	3	3	37	2	20	64	203
Royal Oak Coal Co.																	
Royal Oak,	Northumberland,	1	2	80	10	18	3	6	120	1	4	8	18	2	30	63	183
Midvalley Coal Co.																	
Midvalley Nos. 1 and 2,	Columbia,	3	2	232	136	42	4	75	494	2	6	15	80	6	125	234	728
Greenough Red Ash Coal Co.																	
Greenough,	Northumberland,	1	1	67	53	4	....	19	145	1	6	7	38	6	38	96	241
Seneca Coal Co.																	
Sioux,	Northumberland,	1	2	66	16	7	2	26	120	1	6	9	23	2	45	86	206
Grand total,	....	82	140	5,704	2,017	1,000	287	3,486	12,716	48	302	623	2,603	91	3,461	7,128	19,814

TABLE III—Continued.

Names of Operators.	County.	Number of Days Worked Each Month in Breakers.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Phil. & Reading Coal & Iron Co.,	Nthd., Col. & Sch.	21	20¾	19¾	12 3-10	19 4-10	21¾	15	17 2-3	19½	22½	18¾	12¾	*213¼
Lehigh Valley Coal Co.,	Columbia,	19 2-10	17 7-10	19 6-10	13 8-10	3	4 4-10	13 8-10	16 4-10	17 5-10	20 7-10	18 6-10	14 6-10	*179 2-10
The Union Coal Co.,	Northumberland,	22	19 1-10	20	16¼	23¾	23½	22	22	19¼	23	21½	20	*239
Mineral Railroad and Mining Co.,	Northumberland,	23½	22	21½	22¼	22¾	16	21	19¼	18¾	22½	20¼	20¾	*253
Summit Branch and Lykens Valley Coal Co.,	Dauphin,	19	17 2-3	18	20¼	21	19	20¾	22	18¼	22	20 1-3	15½	*237½
Excelsior Coal Co.,	Northumberland,	18	17	18	15½	14¾	18	14	17	16½	19¾	18¼	16	*207¾
T. M. Righter & Co.,	Northumberland,	23.4	19.8	23	19.2	22.5	22.1	18.5	19.1	20.7	23.4	20.8	16.5	*249
Shamokin Coal Co.,	Northumberland,	21 6-10	20 1-10	21 9-10	19 9-10	24 2-10	24 8-10	23 4-10	24 3-10	15 2-10	19 8-10	19 1-10	21 2-10	*255 5-10
Enterprise Coal Co.,	Northumberland,	16.1	14.6	17.1	13.9	17.9	19.2	13	17.4	16.4	21.6	17.8	18.7	*203 7-10
Shipman Koal Co.,	Northumberland.	16 5-10	13.4-10	14 3-10	11 3-10	13 8-10	9 3-10	11 9-10	10	15 3-10	17 9-10	13 1-10	18 7-10	*165 5-10
White & White,	Northumberland.	23 7-10	18	22 6-10	15 2-10	15 2-10	18 3-10	19 1-10	16	20 5-10	23 3-10	16	19 2-10	*227 1-10
Royal Oak Coal Co.,	Northumberland,	14 4-10	15 3-10	19 6-10	14	14 4-10	16 8-10	16 2-10	14 1-10	15 9-10	19 6-10	16 9-10	9 4-10	*186 6-10
Midvalley Coal Co.,	Columbia,	23 9-10	19 7-10	25 3-10	19 1-10	23 7-10	23 5-10	19 1-10	21	22 2-10	23 5-10	22 5-10	18 4-10	*261 9-10
Greenough Red Ash Coal Co.,	Northumberland.	20.1	17.9	19.3	17.1	17.5	20.1	21.5	17.1	15.2	22.8	20.2	21	*229 8-10
Seneca Coal Co.,	Northumberland,	4 2-10	....	....	12 8-10	16 7-10	17 6-10	12 4-10	11 9-10	15 5-10	17 3-10	17 3-10	11 7-10	*137 4-10

*Average.

TABLE IV—List of fatal accidents that occurred in and about the mines of the Seventh Anthracite District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	11	Jacob Omlor,	German,	Miner,	38	S.	....	....	Potts,	Schuylkill,	Burned by powder. Died on Jan. 12.
	11	Thomas Lynch,	Irish,	Miner,	30	M.	1	2	Potts,	Schuylkill,	Burned by powder on Jan. 11 and died Feb. 2.
	15	George Strabo,	Pole,	Miner,	37	M.	1	....	Richards,	North'd,	Killed by fall of slate.
	17	Peter Mudrey,	Russian,	Laborer,	28	M.	1	1	Hickory Ridge,	North'd,	Killed by fall of top rock.
	23	Anthony Keishka,	Pole,	Miner,	40	S.	....	....	Enterprise,	North'd,	Killed by premature blast.
	30	Adam Barn,	Pole,	Miner,	50	M.	1	4	Reliance,	North'd,	Killed by fall of coal.
	30	Mike Albosta,	Lithuanian,	Miner,	35	M.	1	1	Pennsylvania,	North'd,	Killed by fall of top coal.
	31	Wm. Longhurst,	American,	Laborer	18	S.	....	....	Short Mountain,	Dauphin,	Killed; head crushed between cars.
Feb.	14	Robert Matthews,	American,	Drill runner,	20	S.	....	....	Locust Spring,	North'd,	Killed; fell off bucket going up shaft.
	15	Walter McAndrew,	American,	Driver,	20	S.	....	....	Alaska,	North'd,	Killed; neck broken; caught between mine car and roof.
	28	John McLean,	Irish,	Miner,	40	M.	1	4	Royal Oak,	North'd,	Skull fractured by coal from a shot.
March	6	Nicholas Spader,	German,	Miner,	42	M.	1	....	Potts,	Schuylkill,	Lighting fuse; shot went off before he got to a place of safety.
	7	Simon Balones,	Russian,	Miner,	38	M.	1	4	Colbert,	North'd,	Back broken by a fall of coal. Died at Miners' Hospital March 12.
	9	Tobias Miller,	American,	Slate picker,	15	....	....	....	Williamstown,	Dauphin,	Killed by being caught by a revolving shaft.
	13	John Snyder,	American,	Miner,	22	S.	....	....	North Franklin,	North'd,	Killed by a slip of coal falling from face of breast.
	14	George Ramsey,	American,	Miner,	24	S.	....	....	Hickory Swamp,	North'd,	While fore poling across old breast, prop broke and the coal and rock rushed on him, killing him instantly.
	14	Wm. Blyler,	American,	Miner,	30	M.	1	....	Hickory Swamp,	North'd,	Piece of coal fell from side of gangway, killing him.
	26	George Hain,	American,	Miner,	48	M.	1	11	Burnside,	North'd,	Fatally injured by rock rushing on him. Died March 30.
	27	Frank Mogolinskie,	Pole,	Miner,	32	S.	....	....	Richards,	North'd,	Killed by falling down manway.
April	3	David Jenkins,	Welsh,	Fire boss,	39	M.	1	3	Richards,	North'd,	Killed by an explosion of gas.
	4	Rudolph Rumpolskie,	Pole,	Miner,	50	M.	1	9	Pennsylvania,	North'd,	Killed by shot blown through pillar.
	6	Mike Verlonic,	Austrian,	Miner,	28	S.	....	....	Cameron,	North'd,	Killed by coal from pillar rushing out on him.

TABLE IV—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
	8	Antonio Gilleotte,	Italian,	Laborer,	30	M.	1	....	Natalie,	North'd,	Killed by a fall of coal.
	10	John Matta,	Austrian,	Miner,	40	M.	1	3	Enterprise,	North'd,	Killed by coal falling from face of breast.
	19	Adam Poshinsky,	Pole,	Miner,	30	S.	....	....	Reliance,	North'd,	Burned by powder. Died at Miners' Hospital April 23.
	20	Daniel Kramer,	American,	Miner,	33	M.	1	4	Richards,	North'd,	Killed by falling down pitch 60 feet.
	24	Anthony Savitch,	Lithuanian,	Miner,	25	S.	....	....	Cameron,	North'd,	Suffocated by an outburst of gas.
	24	Julian Martincavitch,	Lithuanian,	Laborer,	25	M.	1	....	Cameron,	North'd,	Suffocated by an outburst of gas.
	30	Joseph Dunn,	American,	Driver,	21	S.	....	....	Royal Oak,	North'd,	Killed by falling under mine cars.
May	6	Uriah Minnick,	American,	Miner,	59	M.	1	1	Short Mountain,	Dauphin,	Neck broken by a fall of coal.
	14	Wesley Rogick,	Russian,	Miner,	30	M.	1	....	Colbert,	North'd,	Killed by coal falling from rib of pillar.
	20	Walter S. Rickert,	American,	Driver,	19	S.	....	....	Williamstown,	Dauphin,	Killed; squeezed between car and prop.
	25	Frank Shelafskie,	Pole,	Miner,	32	M.	1	....	Burnside,	North'd,	Killed; struck on head by a piece of rock falling down shaft.
	25	Simon Holleck,	Slav,	Car loader,	42	M.	1	3	Williamstown,	Dauphin,	Killed by falling under railroad cars.
June	6	John McGuin,	American,	Miner,	34	S.	....	....	Locust Spring,	North'd,	Killed by coal falling from side of pillar.
	15	Walter Vendercuski,	Pole,	Laborer,	27	S.	....	....	Corbin,	North'd,	Killed by a fall of slate.
	19	Benjamin Brubaker,	American,	Miner,	53	M.	....	....	North Franklin,	North'd	Killed by a fall of coal.
	26	James Duffy,	Irish,	Miner,	45	M.	1	3	Bear Valley,	North'd,	Killed by a fall of rock.
	26	James O'Neil,	Irish,	Miner,	26	M.	1	2	Short Mountain,	Dauphin,	Killed by a fall of rock.
	29	Robert Hunter,	German,	Laborer,	75	M.	1	....	Natalle,	North'd,	Killed; kicked by mule on stomach.
July	17	Charles Remonco,	Hungarian,	Mucker,	23	M.	1	1	Bear Valley shaft Williamstown.	Dauphin,	Killed; piece of rock fell from bucket, striking him on head.
Aug.	2	Mike Eko,	Russian,	Loader,	24	M.	1	1	Greenough,	North'd,	Killed by being caught between mine car and shaft timber.
	2	Joseph Gezelskie,	Pole,	Laborer,	23	S.	....	....	Burnside,	North'd,	Killed by piece of coal sliding from side of shaft.
	5	Arthur Grayson,	American,	Slate picker,	13	....	....	....	Potts,	Columbia,	Killed by falling in breaker.
	7	Mattis Rozencranty,	German,	Repairman,	41	M.	1	....	Potts,	Columbia,	Neck broken by being caught by a rush of coal in manway.
	13	John Washdefskie,	Pole,	Miner,	55	M.	1	2	Burnside,	North'd,	Killed by slate falling on him.
	27	George Fagley,	American,	Miner,	44	M.	1	5	Short Mountain,	Dauphin,	Killed by falling down manway.
	30	Jacob Markle,	American,	Scraper,	14	S.	....	....	Hickory Ridge,	North'd,	Killed; caught in scraper line.
Sept.	26	Alfred James,	American,	Miner,	41	M.	1	2	Williamstown,	Dauphin,	Killed; squeezed by a piece of rock.
Oct.	3	Stiney Yocoboskie,	Pole,	Miner,	32	M.	1	1	Sioux,	North'd,	Killed; fell down manway.
	8	Paul Push,	Hungarian,	Laborer,	24	S.	....	....	Midvalley,	Columbia,	Killed by fall of top slate.

	8	John Scovinskie,	Pole,	Miner,	40	M.	1	4	Cameron,	North'd,	Killed by a premature blast.
	17	Peter Botack,	Pole,	Miner,	45	M.	1	....	Richards,	North'd,	Killed; fall of rock.
	21	How Huntzinger,	American,	Runner,	19	S.	....	....	Reliance,	North'd,	Killed; caught between mine wagons.
	23	John Meary,	American,	Laborer,	23	S.	....	....	Sioux,	North'd,	Smothered to death in Rice coal bin.
	26	Michael Gallagher,	American,	Laborer,	23	S.	....	....	Logan slope, Centralia,	Columbia,	Killed by slate falling on him.
Nov.	8	Bartley Connor,	American,	Dragline tender	18	S.	....	....	Natalie,	North'd,	Killed by being caught between scraper line and timber.
Dec.	4	Charles Fry,	American,	Chute tender,	14	S.	....	....	Hickory Ridge,	North'd,	Killed by falling on a revolving shaft.
	4	Albert Trout,	American,	Miner,	29	M.	1	2	Midvalley,	Columbia,	Killed by a rush of coal in breast.
	21	John Renco,	Slav,	Machine runner	24	M.	1	1	Williamstown,	Dauphin,	Suffocated in wash shanty.
	27	Edwin Tiley,	American,	Car loader,	21	S.	....	....	Bast,	Schuylkill,	Killed by being caught by a rope attached to a railroad car.
	27	John Boylan,	American,	Slate picker,	14	....	....	....	Henry Clay,	North'd,	Injured Nov. 12 by having foot caught in rollers. Died Dec. 4th.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Seventh Anthracite District for the year ending December 31, 1901.

Date of accident.	Name of Person.	Nationality by birth.	Occupation	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan. 9	Edward Llewellyn,	Welsh,	Bottom man,	28	S.	East,	Schuylkill,	Skull fractured by coal coming down slope.
11	John Weslovech,	Pole,	Miner,	34	M.	Luke Fidler,	North'd,	Leg broken by fall of rock.
11	Wm. Maurrie,	American,	Laborer,	20	S.	Natalie,	North'd,	Leg broken by fall of coal.
14	Wm. Laughlin,	Irish,	Miner,	55	S.	Continental shaft, Centralia.	Columbia,	Ribs broken by fall of coal.
17	John Deshna,	Pole,	Miner,	37	M.	Natalie,	North'd,	Burned by powder.
17	John W. Howels,	American,	Miner,	30	M.	Cameron,	North'd,	Leg and body crushed by fall of rock.
18	Charles Rehrer,	American,	Laborer,	35	M.	Cameron,	North'd,	Leg broken by column pipe falling on him.
21	Frank Carter,	American,	Laborer,	20	S.	Corbin,	North'd,	Leg broken by fall of coal.
21	Stephen Becha,	German,	Miner,	28	M.	North Franklin,	North'd,	Back injured by coal falling on him.
22	William Prial,	Welsh,	Miner,	40	M.	Potts,	Schuylkill,	Back and legs crushed by fall of coal.
30	Anthony Miskell,	Lithuanian,	Laborer,	18	S.	Pennsylvania,	North'd,	Leg broken by fall of coal.
Feb. 12	James Purcell,	American,	Driver,	17	S.	Sterling, Henry Clay,	North'd,	Leg broken by mine cars.
14	Ambrose Shull,	American,	Miner,	40	M.	Cameron,	North'd,	Face and body cut by flying rock from blast.
14	Al Farred,	American,	Laborer,	28	S.	Cameron,	North'd,	Face and body cut by flying rock from blast.
14	John Davis,	American,	Laborer,	25	M.	Cameron,	North'd,	Face and body cut by flying rock from blast.
23	James Augustine,	American,	Driver,	17	S.	Mt. Carmel,	North'd,	Leg broken between mine cars.
March 6	Frank Pugh,	American,	Slate picker,	15	....	Short Mountain,	Dauphin,	Arm broken while trying to put a rope around shaft.
7	Fouser Licup,	German,	Miner,	35	M.	Cameron,	North'd,	Cut by flying coal from a shot.
16	Roy Smith,	American,	Slate picker,	14	....	Centralia,	Columbia,	Leg injured; caught in a belt.
19	Robert Smith,	English,	Miner,	42	S.	Williamstown,	Dauphin,	Back and chest injured by a fall of coal.
20	Frank Yonshefski,	Russian,	Miner,	30	S.	Corbin,	North'd,	Hip broken by a fall of slate.
22	Bennie Startzel,	American,	Miner,	21	S.	Continental, Centralia,	Columbia,	Back injured by a fall of coal.
27	Larry Eiskraw,	Austrian,	Miner,	32	M.	Cameron,	North'd,	Eye knocked out and bruised about the body by premature blast.
27	George Condron,	Greek,	Laborer,	38	M.	Cameron,	North'd,	Face cut and bruised; explosion of blast.
28	Christ Gentilea,	Austrian,	Miner,	30	S.	Pennsylvania,	North'd,	Bruised about chest and shoulder by premature blast.
April 1	Wm. Nash,	English,	Miner,	50	M.	Williamstown,	Dauphin,	Burned by gas.

	1	Charles Herb, ...	American, ..	Spragger, ...	16	S.	Burnside, ...	North'd, ...	Leg broken; struck by an empty mine car.
	2	Walter Penman, ...	American, ..	Driver, ...	17	S.	Pennsylvania, ...	North'd, ...	Squeezed between car and mule.
	10	Frank Genoskie, ...	Pole, ...	Miner, ...	30	M.	Richards, ...	North'd, ...	Burned about hands and face by gas.
	12	Wm. McCall, ...	American, ..	Driver, ...	17	S.	Sterling, Henry Clay, ...	North'd, ...	Leg broken; caught between spreader and bumper of wagon.
	16	Robert Wagner, ...	American, ..	Door boy, ...	15	....	Midvalley No. 2, ...	Columbia, ...	Arm cut off; fell under car.
	27	Anthony Zugley, ...	Pole, ...	Driver, ...	20	S.	Richards, ...	North'd, ...	Leg broken; caught between cars.
May	2	Al. Persing, ...	American, .	Miner, ...	50	M.	Burnside, ...	North'd, ...	Hand broken by fall of coal.
	2	Mike Vascavage, ...	Hungarian,	Laborer, ...	29	M.	Pennsylvania, ...	North'd, ...	Burned on face and hands by gas.
	3	Joseph Berkaski, ...	Slav, ...	Laborer, ...	40	M.	Williamstown, ...	Dauphin, ...	Leg broken by rush of ashes.
	8	Charles Hower, ...	American, ..	Topman, ...	22	M.	Pennsylvania, ...	North'd, ...	Arm broken; struck by hoisting rope.
	10	Oscar Wagner, ...	American, ..	Driver, ...	21	S.	Mt. Carmel, ...	North'd, ...	Hand mashed between mine cars.
	14	John A. Miller, ...	American, ..	Miner, ...	23	M.	Williamstown, ...	Dauphin, ...	Face and hands burned by an explosion of gas.
	14	James Whitty, ...	Irish, ...	Miner, ...	24	M.	Williamstown, ...	Dauphin, ...	Face and hands burned by an explosion of gas.
	15	Alec Mordick, ...	Pole, ...	Driver, ...	28	M.	Pennsylvania, ...	North'd, ...	Hip broken by falling under car.
	20	Patrick Costello, ...	Irish, ...	Miner, ...	50	M.	Burnside, ...	North'd, ...	Shoulder broken by a fall of coal.
	27	Richard Powell, ...	American, ..	Slate picker, ..	13	....	Williamstown, ...	Dauphin, ...	Leg broken by falling on screen.
June	1	Staney Odolofskie, ..	Pole, ...	Miner, ...	40	M.	Pennsylvania, ...	North'd, ...	Leg broken by a fall of rock.
	1	George Roble, ...	Slav, ...	Miner, ...	30	M.	Cameron, ...	North'd, ...	Injured by a premature explosion.
	11	Mike Sevinski, ...	Pole, ...	Miner, ...	35	M.	Locust Gap, ...	North'd, ...	Arm broken by fall of coal.
	21	Florie Heiser, ...	Pole, ...	Miner, ...	23	S.	Richards, ...	North'd, ...	Burned by gas.
	21	David Rowe, ...	American, ..	Miner, ...	38	M.	Cameron, ...	North'd, ...	Leg broken by falling down a chute.
	22	George Davis, ...	Welsh, ...	Miner, ...	30	M.	Williamstown, ...	Dauphin, ...	Leg broken by being struck by a pulley coming down slope.
July	3	Lott Hepner, ...	American, .	Laborer, ...	36	M.	Enterprise, ...	North'd, ...	Cut and bruised by premature explosion.
	3	Andy Sheppard, ...	Hungarian,	Miner, ...	49	M.	Reliance, ...	North'd, ...	Leg broken by a fall of coal.
	6	Ray Depkins, ...	American, .	Driver, ...	20	S.	Cameron, ...	North'd, ...	Shoulder broken between mine car and side of gangway.
	12	Frank Godlefskie, ...	Pole, ...	Miner, ...	25	S.	Mt. Carmel, ...	North'd, ...	Leg broken by a piece of coal from a shot.
	24	John Schu, ...	German, ...	Miner, ...	40	M.	Locust Spring, ...	North'd, ...	Hand blown off by dynamite which he held in his hand.
	29	Valentine Perato, ..	Austrian, ..	Laborer, ...	42	M.	Pennsylvania, ...	North'd, ...	Leg broken by a fall of coal.
	31	Francis Trovinge, ..	American, .	Driver, ...	19	S.	Richards, ...	North'd, ...	Leg broken by door of mine car.
Aug.	10	Mike Sheets, ...	Pole, ...	Miner, ...	50	M.	Pennsylvania, ...	North'd, ...	Cut on head and face by coal from a blast.
	16	Thos. Bolavaze, ...	Pole, ...	Miner, ...	45	M.	Potts, ...	Columbia, ...	Arm broken by a fall of coal.
	27	John Omlor, ...	American, ..	Breaker oiler,..	15	M.	Locust Spring, ...	North'd, ...	Left leg mashed; caught in a wheel in breaker.
	27	Peter Castalen, ...	Pole, ...	Miner, ...	45	S.	Reliance, ...	North'd, ...	Head injured and leg broken by a fall of top coal.
	29	John Shemenskie, ..	Pole, ...	Machine runner	26	S.	Scott shaft, ...	North'd, ...	Both eyes blown out by a premature blast.
	29	Israel Jones, ...	Welsh, ...	Laborer, ...	25	M.	Natalie, ...	North'd, ...	Leg broken by pillar of rock falling on him.
	29	Patrick Kane, ...	American, ..	Breaker repairman.	25	S.	Centralia, ...	Columbia, ...	Thumb taken off while adjusting belt.
Sept.	7	Arthur Neely, ...	American, ..	Slate picker, ..	14	....	Henry Clay, ...	North'd, ...	Arm broken; fell from chute.
	16	Geo. Pekarick, ...	Slav, ...	Car loader, ...	27	S.	Richards, ...	North'd, ...	Collar bone broken; fell from car.
	16	John McGlynn, ...	American, ..	Driver, ...	22	S.	Sioux, ...	North'd, ...	Arm broken; fell from chute.
	18	Frank Froye, ...	American, ..	Engineer, ...	17	S.	Sioux, ...	North'd, ...	Fell from a scaffold, breaking his arm.
	24	John Cabora, ...	Hungarian,	Miner, ...	32	S.	Natalie, ...	North'd, ...	Injured by a piece of top coal falling on him.
	25	Joseph Metcavadge,	Pole, ...	Miner, ...	29	S.	Sioux, ...	North'd, ...	Fell down manway; broke his arm.
	26	Joseph Doyle, ...	American, ..	Laborer, ...	23	M.	Locust Spring, ...	North'd, ...	Injured internally; kicked by a mule.

TABLE V—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Oct. 4	Harry Paul, Sr., ...	American, ..	Miner, ...	50	W.	Big Mine Run drift, Centralia.	Columbia, ...	Back and hips sprained by fall of coal.
7	John Benfield, ...	American, ..	Miner, ...	38	M.	Centralia, ...	Columbia, ...	Injured by a piece of coal falling on him.
7	Frank Leapolt, ...	Italian, ...	Laborer, ...	27	S.	Centralia, ...	Columbia,	Injured by a piece of coal falling on him.
9	Wm. Kimsel, ...	Pole, ...	Loader, ...	36	M.	Pennsylvania, ...	North'd, ...	Leg broken by mine wagons.
10	John Roscavich, ...	American, .	Spiker, ...	12	....	Centralia, ...	Columbia, ...	Leg broken by jumping from platform and being caught in conveyors.
11	John Toinchisen, ...	Hungarian,	Car loader, ...	26	S.	Alaska, ...	North'd, ...	Injured; caught in scraper line.
12	Chas. Koppenhaver,	American, .	Miner, ...	34	M.	Mt. Carmel, ...	North'd, ...	Foot broken by being caught by coal in chute.
14	Frank Pitskofskie, ..	Lithuanian,	Miner, ...	37	M.	Centralia, ...	Columbia, ...	Squeezed under fall of coal and rock.
21	Thos. J. Griffith, ...	English, ...	Miner, ...	37	M.	Williamstown, ...	Dauphin, ...	Leg broken by a fall of coal.
23	Jno. Stavinskie, ...	Pole, ...	Miner, ...	23	S.	Locust Gap, ...	North'd, ...	Cut about face and body by premature explosion.
24	Jno. Sincavidge, ...	Pole, ...	Miner, ...	38	M.	Colbert, ...	North'd, ...	Burned by an explosion of gas.
24	Frank Vonchick, ...	Pole, ...	Miner, ...	45	M.	Colbert, ...	North'd, ...	Burned by an explosion of gas.
24	John Covlosky, ...	Pole, ...	Miner, ...	38	M.	Big Mountain, ...	North'd, ...	Injured by falling down breast.
Nov. 5	Thos. Rafferty, ...	American, ..	Machine runner,	22	S.	Scott shaft, ...	North'd, ...	Foot mashed by piece of rock falling on it.
6	Philip Kopenhaver, .	American, ..	Miner, ...	36	M.	Williamstown, ...	Dauphin, ...	Burned by an explosion of gas.
6	Anthony Sucuskie, .	Pole, ...	Laborer, ...	45	S.	Mt. Carmel, ...	North'd, ...	Burned by gas.
6	John Sistro, ...	Pole, ...	Laborer, ...	19	S.	Mt. Carmel, ...	North'd, ...	Burned by gas.
19	John Stoneoskie, ...	Pole, ...	Miner, ...	28	M.	Pennsylvania, ...	North'd, ...	Leg broken by fall of coal.
24	Nicholas Stone, ...	Italian, ...	Ashman, ...	30	S.	Mt. Carmel, ...	North'd, ...	Hand mashed; caught in drag line.
Dec. 4	Peter Auginstzowic,.	Pole, ...	Miner, ...	35	M.	Locust Gap, ...	North'd, ...	Head and body bruised by cars.
9	Mart Klevine, ...	Pole, ...	Driver, ...	19	S.	Locust Spring, ...	North'd, ...	Arm broken; fell from a car.
10	Wm. Harman, ...	American, ..	Laborer, ...	17	S.	Sioux, ...	North'd, ...	Leg broken; piece of rock fell on it.
11	Mike Petriiack, ...	Russian, ...	Laborer, ...	25	M.	Hickory Ridge, ...	North'd, ...	Leg broken by a fall of coal.
12	Robert McHugh, ...	American, ..	Door boy, ...	16	....	Locust Gap, ...	North'd, ...	Arm broken; fell from a mule.
18	Ambrose Delcamp, .	American, ..	Blacksmith, ...	40	M.	Alaska, ...	North'd, ...	Injured by cage falling on him.
20	John Otto, ...	American, ..	Bottom man,..	24	S.	Sterling, ...	North'd, ...	Injured by cars coming down slope.

Eighth Anthracite District.

SCHUYLKILL COUNTY.

Pottsville, Pa., February 26, 1902.

Hon. James W. Latta, Secretary of Internal Affairs, Harrisburg, Pa.:

Sir: I have the honor to present herewith my annual report as Inspector of Mines of the Eighth Anthracite District for the year ending December 31, 1901.

The total production of coal for the year was 5,172,530 tons, which is 898,002 tons more than for the year 1900.

The number of fatal accidents during the year was thirty-five, which is three more than in 1900. Twenty-five of these occurred inside of the mines; forty per cent. of which were caused by falls of coal or roof; twenty per cent. by explosions of blasts, powder and dynamite; sixteen per cent. by falling down shafts and slopes; eight per cent. by explosions of gas and eight per cent. by mine cars. Of the ten fatal accidents that occurred outside of the mines, thirty per cent. were caused by mine cars and dumpers, and thirty per cent. by breaker machinery.

The report contains the usual statistical tables; also a detailed description of the fatal accidents, and a brief description of the most important improvements that have been or are being made in the mines.

Very respectfully,
JOHN MAGUIRE,
Inspector of Mines.

Production of Coal in Tons for 1901.

Philadelphia and Reading Coal and Iron Company, . .	2,325,436
Lehigh Coal and Navigation Company, ...	849,217
Dodson Coal Company, ...	272,996
Truman M. Dodson Coal Company, ...	189,754
St. Clair Coal Company, ...	351,907
Beddall Bros., ...	92,110
D. Shepp Estate, ...	5,140

Dunkelberger & Young,	14,991
Leisenring & Co.,	224,602
Lytle Coal Company,	282,305
Silverton Coal Company,	69,520
Davis Bros.,	38,406
E. C. White & Co.,	27,027
Mt. Hope Coal Company,	47,004
B. F. Williams,	15,250
East Ridge Coal Company,	81,363
Pine Hill Coal Company,	126,627
Losch, Moore & Co.,	8,805
Gorman & Campion,	27,158
Slattery Bros.,	11,854
Joseph H. Denning,	7,148
Whims & Hepner,	555
Buck Run Coal Company,	428
William Cook,	1,886
Stoddard Coal Company,	45,176
Middleport Coal Company,	11,183
Smith, Meyers & Co.,	44,682
Total,	5,172,530

The Total Production was Made up as Follows.

Shipped by railroad to market,	4,520,435
Sold at the mines for local use,	79,328
Consumed to generate steam,	572,767
Total,	5,172,530

TABLE A—Showing Production of Coal, Number of Persons Employed by Each Company During the Year 1901, and the Average Number of Tons Produced per Employe.

Names of Companies.	Number of tons produced.	Number of persons employed.
Philadelphia and Reading Coal and Iron Company,	2,325,436	6.163
Lehigh Coal and Navigation Company,	849,217	1,877
Dodson Coal Company,	272,996	563
Truman M. Dodson Coal Company,	189,754	355
St. Clair Coal Company,	351,907	489
Beddall Bros.,	92,110	176
D. Shepp Estate,	5,140	37
Dunkleberger & Young,	14,991	51
Leisenring & Company,	224,602	506
Lytle Coal Company,	282,305	790
Silverton Coal Company,	69,520	200
Davis Brothers,	38,406	93
E. C. White & Co.,	27,027	83
Mt. Hope Coal Company,	47,004	129
B. F. Williams,	15,250	168
East Ridge Coal Company,	81,363	253
Pine Hill Coal Company,	126,627	358
Losch, Moore & Company,	8,805	42
Gorman & Campion,	27,158	69
Slattery Brothers,	11,854	38
Joseph H. Denning,	7,148	30
Whims & Hepner,	555	17
Buck Run Coal Company,	428	55
William Cook,	1,886	12
Stoddard Coal Company,	45,176	39
Middleport Coal Company,	11,183	26
Smith, Meyers & Company,	44,682	36
Total,	5,172,530	12,655

Number of tons produced per employe, 408.7.

TABLE B—Number of Fatal Accidents and Tons of Coal Produced per Life Lost.

Names of Companies.	Number of fatal accidents.	Number of tons of coal produced per life lost.
Philadelphia and Reading Coal and Iron Company,	18	129,191
Lehigh Coal and Navigation Company,	4	212,304
Dodson Coal Company,	2	136,498
Truman M. Dodson Coal Company,	1	189,754
St. Clair Coal Company,	4	87,977
Beddall Brothers,	2	46,055
D. Shepp Estate,	....	5,140
Dunkleberger & Young,	....	14,991
Leisenring & Company,	1	224,602
Lytle Coal Company,	2	141,152
Silverton Coal Company,	....	69,520
Davis Brothers,	....	38,406
E. C. White & Company,	....	27,027
Mt. Hope Coal Company,	1	47,004
B. F. Williams,	....	15,250
East Ridge Coal Company,	....	81,363
Pine Hill Coal Company,	....	126,627
Losch, Moore & Company,	....	8,805
Gorman & Campion,	....	27,158
Slattery Brothers,	....	11,854
Joseph H. Denning,	....	7,148
Whimes & Hepner,	....	555
Buck Run Coal Company,	....	428
Wm. Cook,	....	1,886
Stoddard Coal Company,	....	45,176
Middleport Coal Company,	....	11,183
Smith, Meyers & Company,	....	44,682
Total and average,	35	147,786

TABLE C—Showing the Number of Fatal and Non-Fatal Accidents, and the Number of Tons of Coal Produced per Accident.

Names of Companies.	Number of accidents.	Number of tons of coal produced per accident.
Philadelphia and Reading Coal and Iron Company,	73	31,855
Lehigh Coal and Navigation Company,	14	60,658
Dodson Coal Company,	13	21,000
Truman M. Dodson Coal Company,	5	37,951
St. Clair Coal Company,	10	35,191
Beddall Brothers,	3	30,703
D. Shepp Estate,		5,140
Dunkleberger & Young,		14,991
Leisenring & Company,	4	56,150
Lytle Coal Company,	12	23,525
Silverton Coal Company,	7	9,931
Davis Brothers,		38,406
E. C. White & Company,		27,027
Mt. Hope Coal Company,	3	15,668
B. F. Williams,	1	15,220
East Ridge Coal Company,	1	81,363
Pine Hill Coal Company,	5	25,325
Losch, Moore & Company,		8,805
Gorman & Campion,		27,158
Slattery Brothers,		11,854
Joseph H. Denning,		7,148
Whims & Hepner,		555
Buck Run Coal Company,		428
William Cook,		1,886
Stoddard Coal Company,		45,176
Middleport Coal Company,		11,183
Smith, Meyers & Company,		44,682
Total and average,	151	34,255

TABLE D—Classification of Accidents.

	Killed or fatally injured—inside.	Killed or fatally injured—outside.	Injured.—Inside	Injured—outside.	Total killed and injured.
Falls of coal and roof,	10		37		47
Explosions of gas,	2		21		23
Explosions of blasts,	2		11		13
Explosions of powder,	2				2
Explosions of dynamite,	1		2		3
Fall of frozen dirt,		1			1
Mine cars and dumpers,	2	3	19	4	28
Rush of coal in battery,	1		4		5
Struck by falling timber at bottom of slope,	1		1		2
Falling down shafts,	3				3
Falling down slopes,	1		1		2
Falling down schutes and manways,			3	1	4
Explosions of boilers,		1			1
Bursting of fly wheel,		1			1
Breaker machinery,		3		2	5
Injured by mules,			3	1	4
Struck by trough thrown from breaker,		1			1
Miscellaneous,			3	3	6
Total,	25	10	105	11	151

TABLE E—Occupations of Persons Killed and Injured.

	Killed or fatally injured.	Injured.	Total.
Miners,	17	58	75
Laborers, inside,	4	18	22
Laborers, outside,	4	3	7
Fire bosses,	....	1	1
Loader bosses,	....	1	1
Loaders,	....	6	6
Battery starters,	1	2	3
Drivers, inside,	1	12	13
Drivers, outside,	....	2	2
Repairmen,	1	....	1
Tunnel contractor,	....	1	1
Door boys,	....	3	3
Fan boys,	....	1	1
Coal pusher,	....	1	1
Patcher,	....	1	1
Firemen,	2	....	2
Carpenters, inside,	1	....	1
Carpenters, outside,	....	1	1
Foreman on stripping,	....	1	1
Locomotive helper,	....	1	1
Slate pickers,	....	3	3
Headman, outside,	1	....	1
Attending elevators, scrapers and screens,	3	....	3
Total,	35	116	151

TABLE F—Nationalities of Persons Killed and Injured.

	Americans.	Irish.	Welsh.	English.	German.	Hungarians.	Poles.	Lithuanians.	Slavs.	Italian.	Austrian.	Russian.	Greek.	Total.
Killed,	14	....	1	1	3	1	9	3	1	2	....	....	....	35
Injured,	50	8	6	1	3	7	25	7	2	4	1	1	1	116
Total,	64	8	7	2	6	8	34	10	3	6	1	1	1	151

Table showing the quantity of air circulating through the mines of the Eighth Anthracite District at the end of the year 1901.

Name of Colliery.	Name of Operator.	Number of exhaust fans.	Number of forcing fans.	Number of splits of air.	Number of persons in the mines day and night.	Cubic feet of air at the intake.	Cubic feet of air at or near the face of the workings.	Cubic feet of air at the outlet.
West Brookside,	Philadelphia and Reading Coal and Iron Co.,	4		25	831	260,700	50,387	268,000
Lincoln,	Philadelphia and Reading Coal and Iron Co.,	3		18	550	148,444	96,488	148,634
Good Spring,	Philadelphia and Reading Coal and Iron Co.,	1	2	10	283	107,726	70,021	107,956
Otto,	Philadelphia and Reading Coal and Iron Co.,	2	2	12	370	139,800	55,200	141,600
Phoenix Park No. 3,	Philadelphia and Reading Coal and Iron Co.,	2		6	223	148,200	56,000	152,000
Richardson,	Philadelphia and Reading Coal and Iron Co.,	2		8	126	50,000	18,744	52,000
Glendower,	Philadelphia and Reading Coal and Iron Co.,	2	2	6	199	105,870	27,920	107,424
Silver Creek,	Philadelphia and Reading Coal and Iron Co.,	1		10	561	122,300	40,515	125,000
Eagle Hill,	Philadelphia and Reading Coal and Iron Co.,	2		9	491	140,250	56,400	143,000
Wadesville,	Philadelphia and Reading Coal and Iron Co.,	1		10	313	97,880	27,720	99,000
Colliery No. 8,	Lehigh Coal and Navigation Co.,	1		6	411	95,885	43,927	96,495
Colliery No. 10,	Lehigh Coal and Navigation Co.,	1		6	336	78,500	37,305	79,053
Colliery No. 11,	Lehigh Coal and Navigation Co.,	1		5	262	59,000	30,500	65,100
Colliery No. 12,	Lehigh Coal and Navigation Co.,	1		2	200	57,650	20,400	72,100
Morea,	Dodson Coal Co.,	3		9	260	83,000	30,600	85,360
Kaska William,	Truman M. Dodson Coal Co.,	2		9	218	66,960	10,600	70,000
St. Clair,	St. Clair Coal Co.,	2		8	241	88,180	57,019	99,111
Greenwood,	Beddall Brothers,	1		7	90	22,840	5,674	23,200
East Lehigh,	D. Shepp Estate,	Natural,						
West Lehigh,	Dunkleberger & Young,		1	2	27	17,000	13,900	
Oak Hill,	Leisenring & Co.,	2		9	359	87,590	27,200	90,200
Lytle,	Lytle Coal Co.,	2		10	520	105,924	41,560	108,019
Silverton,	Silverton Coal Co.,	2		7	131	72,520	32,280	74,600
Ellsworth,	Davis Brothers,	Natural.			39			
Howard,	E. C. White & Co.,	1		1	38	12,500	5,000	15,000
Mt. Hope,	Mt. Hope Coal Co.,				30			
Williams,	B. F. Williams,	2						
East Ridge,	East Ridge Coal Co.,	2		8	124	62,300	31,600	79,100
Pine Hill,	Pine Hill Coal Co.,	1	1	6	233	82,437	19,975	84,729
Lorberry,	Losch, Moore & Co.,	1						
Bell,	Gorman & Campion,	Natural,		2	35	11,000	4,000	
Tuscarora,	Slattery Brothers,	Natural,		2	25	17,325	3,000	
Sebastopol,	Joseph H. Denning,	Natural,			9			
Jugular,	Whims & Hepner,	Natural,			7			
Buck Run,	Buck Run Coal Co.,	Natural,						
Oakley,	Wm. Cook,	Natural,			7			
Total,		45	8					

Descriptions of Fatal Accidents.

1. Thomas Leonard, sixteen years of age who was employed at attending shaker screens, was killed at the St. Clair colliery breaker on January 3. The schute boss missed him, and after searching for sometime, he found a coat wrapped around one of the driving shafts. The body of the boy was found under the breaker about thirty-five feet below the shaft, which was a considerable distance from his place of work. It was properly fenced, and why the boy went to it is not known.

2. James Motula, was killed at Wadesville colliery on January 22. He was skipping a pillar in the Seven Foot vein, which was ten feet thick. He had fired a shot in the middle bench which left a large piece of the top bench about two feet thick, hanging. He sounded this piece and thought it safe, and began to work under it when it fell and killed him.

3. Andrew Setlock, was fatally injured at the St. Clair colliery on January 31, by a fall of slate. He was working with a miner in a breast in the Buck Mountain. The roof had been a good hard rock up to within a few feet of the face, when a slate set in starting with a thin edge and increasing to one foot in thickness. They had two props under the slate, the upper one being seven feet from the face. While the laborer was crossing the breast near the face, a piece of slate fell on him injuring him so severely that he died shortly after reaching the hospital. He was employed to load coal, but as the colliery was idle on that day, the miner took him to work with him. He had been in the country only about four weeks and had worked only four days at the colliery.

4. Charles Wolf, was fatally injured at the Lincoln colliery on February 5. He was engaged at pushing dirt on schute from dirt bank to the scraper line for the washery. While in a stooping position, a lump of frozen dirt rolled down from the bank, injuring him so severely that he died in about half an hour.

5. Milton Koenig, was severely scalded by the bursting of a steam boiler at the Greenwood colliery on February 18, and died on February 28. He had started at 5.30 A. M. to get steam up before the colliery commenced to work at 7 A. M. He had some trouble to get water into the boiler and the water was low. He evidently turned the water in while the boiler was hot, causing it to explode with great force.

6. Simon Roberts, was killed at Kaska-William colliery on March 9. At the time of the accident a driver was hauling a dumper of dirt from under the breaker. Burkot Bromis, another laborer, who was away from his place of work, was standing carelessly against one of the breaker posts near the track. The driver and Simon Roberts,

who was some distance away, called to him to get out of the way, but he told them he was all right, and refused to move. The dumper caught him and Roberts went to his assistance. While doing so the driver took his mule to pull the dumper back, not knowing that Roberts was in the way. The dumper caught Roberts and injured him so severely that he died in a few minutes. Bromis, who was the direct cause of the accident, was only very slightly injured.

7. Anthony Lamon, was killed at Phoenix Park No. 3 colliery on March 16. He was employed at skipping pillar in the Diamond vein eight foot four inches thick on light pitch near the top of saddle. There was about two and a half feet of bone on top of the vein which was propped up. One of the props swung out allowing a piece to fall which caught Lamon, killing him instantly.

8. George Rukata, was killed at West Brookside colliery on March 22. He was employed on the east breaker tip dumping mine cars. While riding in to the dip on the front end of a loaded car, he fell off, the wheels passed over him killing him instantly.

9. Martin Romockoskie, was killed at the Lytle colliery on April 3. He was driving a heading through the pillar at the face of a finished breast and firing a shot, retreated into the heading below. Shortly after reaching there, he in some way ignited a full keg of powder, the explosion of which killed him instantly.

10. August Nehenkie, was fatally injured at West Brookside colliery on April 9. He had gone into the water level drift to commence work on the night shift. He stood about five feet inside of a loaded wagon with his back against a prop. The locomotive bumped some cars against the loaded one, which knocked it off the track, and the end of it caught him, injuring him so severely that he died on the 11th.

11. Victor Haertter, was instantly killed at West Brookside colliery on the night of May 3. He had drilled a hole in the bottom rock at the face of the gangway and was pushing a stick of dynamite into the hole when it exploded, killing him instantly. The fuse with exploder attached had not yet been put into the hole.

12. Stiney Basoc, was killed at Eagle Hill colliery on May 14. He was working in a breast in the Skidmore vein, five feet seven inches thick, pitching twenty degrees. Above the vein there was a bench of bone about one foot thick that was being propped up. About an hour before the accident occurred, the fire-boss visited the place and ordered him to put some more props up. He thought it was safe and fired a shot in the face first; then, while sinking a prop hole, a piece of the bone fell on him killing him.

13. William Klinger, was killed at West Brookside colliery on May 29. He was working at a battery, trying to start the stuff, which was blocked above it. He got inside of the battery and was

putting a shot of dynamite on a lump of slate when it started and caught him against the props injuring him so severely that he died before the men who went to his assistance could relieve him.

14. Joseph Myers was fatally burned by an explosion of powder at West Brookside colliery on June 26. He was making a cartridge in a heading and ignited the powder which also ignited about half a keg of powder. He died on July 4.

15. Miles Underkoffler, was killed at West Brookside colliery on July 11. He was working in the water level drift robbing pillars. The roof was bad and he was sinking a prop hole to put a prop under it when a piece of rock fell on him.

16. Thomas Bietsky was killed at Morea colliery on September 5. He was driving a schute in a pillar for the purpose of robbing it. After he had got a few feet above the heading, the outside part of the pillar ran and buried him killing him instantly.

17. Charles B. Conley was fatally injured at Colliery No. 11, L. C. & Nav. Co., September 5. He was letting a car down the plane on which fuel is hoisted for the shaft boilers, and ran the engine too fast. The fly wheel burst and he was struck by the pieces. He died the same evening.

18. James Heffinger was killed at Colliery No. 12, L. C. & Nav. Co., on September 9. He was employed as a bell-boy, watching the scraper and elevator lines under the breaker to signal to the engineer if any thing went wrong with them. He fell into a scraper line and was dragged to the bottom of the elevators where he was killed.

19. John Marko was fatally injured at St. Clair colliery on September 24. He had fired a shot which failed to bring the coal down and he and his partner tried to bar it down, but could not. He commenced to work under it when it fell on him. He died on September 27.

20. Roland Williams was burned by an explosion of gas at Colliery No. 8, L. C. & Nav. Co., on September 27. He was working in a breast and had gone down to the gangway for brattice plank. On returning he went up with a naked light and when he got near the face, a piece of coal fell and brought down a small quantity of gas that had collected, which was exploded by his naked light. He died on October 2.

21. Joseph Venarskie was killed at Morea colliery on October 7. He was employed as a general laborer , but on the day of accident had been sent to assist the bottom man at the shaft. They were hoisting from the Seven Foot level and he opened the gate and walked into the shaft, while the cage was up, and fell to the bottom a distance of eighty-eight feet, and was killed.

22. John Neider was killed at Lincoln colliery on October 9. He

had started his team with a trip of loaded cars and was getting on the front end of the trip when he slipped and fell under the cars and was killed instantly.

23. George Phillips was killed at the Oak Hill colliery on October 10. He was firing a shot, which went off before he got away from it. He was found six feet from the face, and died in a few minutes.

24. Anthony Malouski was killed at the Greenwood colliery on October 11. He was working in a breast, and while nailing brattice on the manway, a piece of coal which he had left hanging fell on him, killing him instantly.

25. Michael Stone was killed at the Glendower colliery on October 18. At the time of the accident some men were taking scrap out of the breaker, and before throwing it down they sent a man down to see that no person was in the way. Stone went under the pockets and sat down to eat a lunch; he knew they were throwing the stuff down, but thought he was far enough out of the way, but a piece of it struck a tie and glanced under the pockets to where he was sitting, struck him on the head and he died in a few minutes.

26. George Freeman, a breaker boy was killed at the Mt. Hope colliery breaker on October 22. A short time before the accident the breaker machinery was stopped on account of a belt being off and the boy stood looking at them putting it on. A few minutes after the machinery started he was found wrapped around a shaft, away from his place of work. The shaft was fenced and he had no business near it.

27. Eugene Snyder was killed at West Brookside colliery on November 13. He was working in a breast. The fireboss visited the place during the forenoon and ordered him to pull a piece of loose slate down but he failed to do so. At 1 o'clock P. M., it fell on him, killing him instantly.

28 and 29. Irvin Stickler and William Neithamer were killed at West Brookside colliery on November 14, at 4.15 P. M., while the men were being hoisted up the No. 4 vein East Brookside slope, which is about 2,100 feet deep on an average dip of about sixty degrees, with double track. Stickler had been hoisted up the slope but had forgotten his safety lamp and got on the car to go down for it. In going over the knuckle at the top of the slope the front wheel mounted the guard rail, and it went down that way about five hundred feet, when the end of the car caught a gate stringer between the tracks at the No. 4 level. This held the car until the rope ran out when the side chains dropped from the hooks and the car started on a wild dash down the sixteen hundred feet of slope. Stickler was thrown out and fell near the bottom. Neithamer was at the bottom waiting to be hoisted and had gone up about fifteen feet so as to be first in getting

into the next car, and was killed by falling timber that the car knocked out on its day down.

30. William Yencofsky was killed at the Lytle colliery on November 15. He was riding up the shaft on the cage with nine other men after he had quit work in the evening. Instead of standing in on the cage where there was plenty of room, he stood near the end facing the side of the shaft. When about forty feet from the top of the shaft, which is fifteen hundred feet deep, some of the men saw him striking the shaft timber with his hands. Before they could lay hold of him he had fallen between the cage and the timber to the bottom of the shaft.

31. John Igo was burned by an explosion of gas at Silver Creek colliery on November 19, and died on December 11. He was working with his father, Thomas Igo, in a breast. They used naked lights. contrary to orders, and ignited a small quantity of gas at the face of the breast.

32. Joseph Nicholas had his leg crushed between the bumpers of cars at St. Clair colliery on December 4. The leg was amputated and he died on December 18. He had unhitched the chain at the top of the plane and was riding on the front end of the car, when it bumped against another car, and his leg was caught between the bumpers.

33. Adam Holas, a miner was killed at the Wadesville colliery on December 13, by a fall of coal. The vein was eight and one-half feet thick, on a pitch of twenty-four degrees, while taking up some bottom coal an overhanging wing of the top bench broke off from a slip in the rib and fell on him, killing him instantly.

34. George Eberts was killed at the No. 8 colliery of Lehigh Coal and Navigation Company on December 19, by falling down the shaft. There was about eleven feet of water on the bottom of the shaft and the cages had been taken off the coal hoisting compartments and tanks put on to hoist water. The safety gates had been removed to get the cages off and two chains had been put across the shaft in their stead. George Ebert went into the top of the shaft with other carpenters to build a trough to carry the water away. The top of the shaft is inside of a short tunnel from the surface. It was the first time he had been into it and he saw some lights on the other side of the shaft and got over the lower chain and under the upper one and walked into the shaft and fell to the bottom about eight hundred feet.

35. Charles Carticulas was killed at the Wadesville colliery on December 30. He was about to fire a shot and told his partner who started down the breast. When he got about thirty feet away, the shot went off and he found Carticulas' body about seven feet from the face of the breast, he having received the full force of the shot on the back of his head.

Improvements.

During the year the usual improvements such as driving tunnels to keep up or increase the shipping capacity; the driving of airways and erection of additional fans for ventilation, the enlargement of breakers with additional machinery for the better preparation of coal, have been made; many additions have also been made to the pumping and steam plants.

The principal improvements are as follows:

At the Pine Hill colliery, operated by the Pine Hill Coal Company, the shaft is being sunk deeper to open a new lift below the present workings. It was sunk seventy-nine feet to December 31.

The Buck Run Coal Company has taken possession of the Woodside Colliery which was abandoned in 1900, and the water has been pumped out of the old Rohrersville slope. A new slope 366 feet deep on a dip of forty-five degrees has been opened on the Daniel vein about 3,700 feet east of the old Rohrersville slope, and to the same level. At the bottom of the slope a tunnel has been driven south 295 feet to the Crosby vein, and a tunnel driven north 210 feet to the Buck Mountain vein. A new breaker is being erected near this new slope.

The Lytle Coal Company has completed a new breaker to prepare coal mined at the new shaft. It has not yet been in operation. This breaker with the new shaft will be known as the Lytle colliery No. 2.

At the Kaska-William colliery, operated by the Truman M. Dodson Coal Company, the south tunnel on the shaft level has been driven about two hundred and seventy-five feet south of the Orchard vein; near the inner end of the tunnel, a shaft twelve feet by twelve feet eight inches in clear, divided into two compartments by a ten inch bunton, is being sunk to open new workings below the present inside slope level. Two drill holes have been bored from the surface five hundred and ten feet each, through which the ropes will run down to hoist from the new shaft, the material from which will be landed on the tunnel below and be hoisted to the surface in the old shaft, which is about eleven hundred and fifty feet north of the new inside shaft. The new shaft was sunk one hundred and fifteen feet in 1901.

A single track inside slope has been sunk on the bottom bench of the Mammoth vein 307 feet deep on dip of forty-five degrees, about five hundred feet west of the bottom of the main shaft, and a gangway started westward thirty-five feet above the bottom of the slope to work coal left above a small anticlinal above the tops of the breasts worked in the No. 1 inside slope.

The Philadelphia and Reading Coal and Iron Company is sinking a new shaft in the Heckschersville Valley to be called the Pine Knot colliery. The shaft is twelve feet eight inches wide east and west, and thirty-one feet long north and south, clear of timber. This is divided into four compartments each seven feet by twelve feet eight inches. The two end compartments are subdivided by an eight inch bunton, making two compartments of six by seven feet each for hoisting water.

A new washery has been erected in the Heckschersville Valley by the same company, called the Anchor washery, which is used for rescreening the old dirt banks of the Anchor colliery, which was abandoned many years ago.

The new shaft being sunk at the West Brookside colliery near the East Brookside slope, was sunk four hundred and twenty-seven feet during the year.

At the Good Spring colliery, the No. 3 slope was sunk from the first to the second lift three hundred and seventy-eight feet on a dip of forty-eight degrees. A trial slope was also sunk on the No. 2 Lykens Valley vein three hundred and sixty-three feet deep on dip of thirty-nine degrees north of the No. 3 slope.

The air shaft of the Wadesville colliery was completed at a depth of six hundred and ninety-four feet to the Primrose vein, and a fan twenty-one feet in diameter installed.

The annual examination for mine foreman and assistant mine foreman was held at Pottsville, in June, 1901. The examining board was composed of John Maguire, Mine Inspector; Thomas Doyle, superintendent; David Tucker and William Dormer, miners.

The following were recommended for certificates: For mine foreman, Edward Jones, Morea; James Filer, Coaldale; Gethin Jenkins, Minersville. For assistant mine foreman, William A. Davis, Llewellyn; Lewis Howells, Llewellyn.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Eighth Anthracite District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Phila. and Reading Coal and Iron Co.						
West Brookside,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia & Reading.
Lincoln,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia & Reading.
Good Spring,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia & Reading.
Otto,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia & Reading.
Phoenix Park No. 3,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia & Reading.
Richardson,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia & Reading.
Glendower,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia & Reading.
Silver Creek,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia & Reading.
Eagle Hill,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia & Reading.
Wadesville,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia & Reading.
Pine Knot,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia & Reading.
Kalmia washery,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia & Reading.
Anchor washery,	Schuylkill,	R. C. Luther,	Pottsville,	John Veith,	Pottsville,	Philadelphia & Reading.
Lehigh Coal & Navigation Co.						
Colliery No. 8,	Schuylkill,	W. D. Zehner,	Lansford,	Baird Snyder, Jr., Asst. Supt. T. M. Whildin, Gen. Inside Foreman.	Lansford,	Central R. R. of N. J.
Colliery No. 10,	Schuylkill,	W. D. Zehner,	Lansford,		Lansford,	Central R. R. of N. J.
Colliery No. 11,	Schuylkill,	W. D. Zehner,	Lansford,		Lansford,	Central R. R. of N. J.
Colliery No. 12,	Schuylkill,	W. D. Zehner,	Lansford,		Lansford,	Central R. R. of N. J.
Dodson Coal Co.						
Morea,	Schuylkill,	E. L. Bullock,	Audenreid,	W. J. Hays,	Morea,	Lehigh Valley,
Truman M. Dodson Coal Co.						
Kaska-William,	Schuylkill,	E. L. Bullock,	Audenreid,	T. C. Reese,	Kaska,	Philadelphia & Reading.
St. Clair Coal Co.						
St. Clair,	Schuylkill,			Wm. T. Smyth,	St. Clair,	Philadelphia & Reading.
Beddall Bros.						
Greenwood No. 13,	Schuylkill,			M. A. Gerber,	Tamaqua,	Central R. R. of N. J.
D. Shepp Estate.						
East Lehigh,	Schuylkill,	E. M. B. Shepp,	Tamaqua,			Philadelphia & Reading.
Dunkleberger & Young.						
West Lehigh,	Schuylkill,			John Young,	Tamaqua,	Philadelphia & Reading.
Leisenring & Co.						
Oak Hill,	Schuylkill,			William Schwenk,	Minersville,	Philadelphia & Reading.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Lytle Coal Co. Lytle,	Schuylkill,	Morris Williams,	Wilkes-Barre,	Arthur Kennedy,	Minersville,	Pennsylvania.
Silverton Coal Co. Silverton,	Schuylkill,			Gomer E. Jones,	Llewellyn,	Philadelphia & Reading.
Davis Bros. Ellsworth,	Schuylkill,	John H. Davis,	St. Clair,			Philadelphia & Reading.
E. C. White & Co. Howard,	Schuylkill,	Richard White,	Pottsville,			Philadelphia & Reading.
Mt. Hope Coal Co. Mt. Hope,	Schuylkill,	S. D. Kynor,	Pottsville,			Philadelphia & Reading.
B. F. Williams. Williams,	Schuylkill,			T. H. Griffith,	Pottsville,	Philadelphia & Reading.
East Ridge Coal Co. East Ridge,	Schuylkill	B. E. Kingsley,	Minersville,			Philadelphia & Reading.
Pine Hill Coal Co. Pine Hill,	Schuylkill,			Richard J. Uren,	Minersville,	Pennsylvania.
Losch & Moore. Lorberry,	Schuylkill,	Wm. Moore,	Tremont,			Philadelphia & Reading.
Gorman & Campion. Bell,	Schuylkill,			Edward Gorman,	Tuscarora,	Philadelphia & Reading.
Slatterly Bros. Tuscarora,	Schuylkill,			Daniel Slattery,	Tuscarora,	Philadelphia & Reading.
Joseph H. Denning. Sebastopol,	Schuylkill,	Joseph H. Denning,	St. Clair,			No railroad to mine.
Whims & Hepner. Jugular,	Schuylkill,			James J. Whims,	St. Clair,	Coal hauled to Ellsworth colliery, P. & R. siding.
Buck Run Coal Co. Buck Run,	Schuylkill,	William R. Wilson,	Minersville,			Philadelphia & Reading.

William Cook.						
Oakley,	Schuylkill,	William Cook,	Tuscarora,			Coal hauled to P. & R. siding at Tuscarora.
Stoddard Coal Co.						
Wolf Creek washery,	Schuylkill,			D. H. McGee,	Minersville,	Philadelphia & Reading.
Middleport Coal Co.						
Middleport washery,	Schuylkill,			James S. Kerns,	Middleport,	Philadelphia & Reading.
Smith, Myers Co.						
Meyers washery,	Schuylkill,	Henry Meyers,	Minersville,	Charles Meyers,	Pottsville,	Philadelphia & Reading.

TABLE II—Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Eighth Anthracite District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Philadelphia and Reading Coal and Iron Co.												
West Brookside,	Schuylkill,	385,178	64,750	....	449,928	247.3	1,219	9	14	4,841	48,675	127
Lincoln,	Schuylkill,	270,307	21,080	4,709	296,096	243.4	758	2	7	7,371	13,882	84
Good Spring,	Schuylkill,	173,034	13,430	3,036	189,500	220.5	498	......	2	5,850	20,079	47
Otto,	Schuylkill,	208,052	25,147	1,519	234,718	228.5	585	......	2	2,678	25,080	57
Phoenix Park No. 3,	Schuylkill,	96,315	13,816	1,115	111,246	227.4	342	1	4	1,204	17,737	49
Richardson,	Schuylkill,	87,200	25,972	573	113,745	213.4	244	......	3	105	31,731	38
Glendower,	Schuylkill,	94,091	34,006	209	128,306	206.9	409	1	4	1,389	13,053	56
Silver Creek,	Schuylkill,	300,931	26,927	2,562	330,420	233.8	827	1	11	4,533	11,922	77
Eagle Hill,	Schuylkill,	254,032	31,709	2,285	288,026	232.5	754	1	4	3,412	9,475	61
Wadesville,	Schuylkill,	104,657	22,910	3,031	130,598	189.5	441	3	4	3,016	17,368	35
Pine Knot,	Schuylkill,	....	....	....	....	....	32	......	......	....	69	2
Kalmia washery,	Schuylkill,	32,135	876	4	33,015	113.4	23	......	......	....	....	....
Anchor washery,	Schuylkill,	19,333	505	....	19,828	94.7	31	......	......	....	....	....
Total,		2,025,265	281,128	19,043	2,325,436	223.5	6,163	18	55	34,399	209,071	633
Lehigh Coal and Navigation Co.												
Colliery No. 8,	Schuylkill,	267,344	19,650	5,785	292,779	235.5	606	2	......	620	84,750	130
Colliery No. 10,	Schuylkill,	192,697	19,655	4,858	217,210	192.4	514	......	6	900	39,700	78
Colliery No. 11,	Schuylkill,	233,638	13,520	5,280	252,438	222.1	448	1	......	780	44,300	53
Colliery No. 12,	Schuylkill,	74,124	12,071	595	86,790	137.5	309	1	4	780	10,750	12
Total,		767,803	64,896	16,518	849,217	196.9	1,877	4	10	3,080	179,500	273
Dodson Coal Co.												
Morea,	Schuylkill,	246,935	25,137	924	272,996	252.8	563	2	11	3,539	43,450	59

Truman M. Dodson Coal Co. Kaska-William,	Schuylkill,	161,521	27,320	913	189,754	232.9	355	1	4	2,600	27,150	31
St Clair Coal Co. St. Clair,	Schuylkill,	294,804	55,072	2,031	351,907	242.2	489	4	6	6,881	6,511	55
Beddall Brothers. Greenwood No. 13,	Schuylkill,	79,404	4,000	8,706	92,110	234.8	176	2	1	775	7,600	17
D. Shepp Estate. East Lehigh.	Schuylkill,	2,399	220	2,521	5,140	169.8	37	......	......	87	1,025	4
Dunkleberger & Young. West Lehigh,	Schuylkill,	10,469	700	3,822	14,991	220	51	......	......	75	2,700	9
Leisenring & Co. Oak Hill,	Schuylkill,	200,836	22,000	1,766	224,602	212.2	506	1	3	4,166	27,850	47
Lytle Coal Co. Lytle,	Schuylkill,	233,673	44,678	3,954	282,305	212.8	790	2	10	5,429	64,225	79
Silverton Coal Co. Silverton,	Schuylkill,	58,205	10,950	365	69,520	184.3	200	......	7	700	15,000	22
Davis Brothers. Ellsworth,	Schuylkill,	35,552	2,500	354	38,406	282.5	93	......	......	....	18,000	6
E. C. White & Co. Howard,	Schuylkill,	22,799	3,650	578	27,027	199.8	83	......	......	515	450	6
Mt. Hope Coal Co. Mt. Hope,	Schuylkill,	37,263	5,000	4,741	47,004	173	129	1	2	1,964	6,850	14
B. F. Williams. Williams,	Schuylkill,	9,897	2,500	2,853	15,250	60	168	......	1	250	4,000	12
East Ridge Coal Co. East Ridge,	Schuylkill,	74,108	7,200	55	81,363	165.7	253	......	1	2,662	4,623	22
Pine Hill Coal Co. Pine Hill,	Schuylkill,	118,139	7,300	1,188	126,627	186.4	358	......	5	3,627	17.300	18
Losch, Moore & Co. Lorberry,	Schuylkill,	6,989	856	960	8,805	65.7	42	......	......	96	60	7
Gorman & Campion. Bell,	Schuylkill,	25,698	1,460	....	27,158	217	69	......	......	562	400	6
Slattery Brothers. Tuscarora,	Schuylkill,	11,348	225	281	11,854	192	38	......	......	250	800	5
Joseph H. Denning. Sebastopol,	Schuylkill,	....	250	6,898	7,148	246	30	......	......	12	300	10

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Whims & Hepner. Jugular,	Schuylkill,	505	50	....	555	12	17	......	......	....	....	5
Buck Run Coal Co. Buck Run,	Schuylkill,	....	400	28	428	....	55	......	......	23	832	5
William Cook. Oakley,	Schuylkill,	1,116	225	545	1,886	151.5	12	......	......	90	100	2
Stoddard Coal Co. Wolf Creek washery,	Schuylkill,	41,632	3,400	141	45,176	170.4	39	......	......	....	....	3
Middleport Coal Co. Middleport washery,	Schuylkill,	10,793	250	140	11,183	127	26	......	......	....	....	4
Smith, Meyers & Co. Meyers washery,	Schuylkill,	43,282	1,400	....	44,682	138	36	......	......	....	....	3
Grand total,	....	4,520,435	572,767	79,328	5,172,520	*187.63	12,655	35	116	71,782	637,797	1,357

*Average.

TABLE II—Continued.

Names of Operators.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Philadelphia and Reading Coal and Iron Co.,	Schuylkill,	157	4,710	96	12,855	17,565	12	......	......	111	11,917	25	24,209	11,632	......	2
Lehigh Coal and Navigation Co.,	Schuylkill,	49	840	33	4,625	5,465	7	......	......	51	1,858	9	8,920	4,460	......	......
Dodson Coal Co.,	Schuylkill,	24	480	16	1,990	2,470	4	......	......	31	2,300	4	7,000	2,500	......	......
Truman M. Dodson Coal Co.,	Schuylkill,	4	80	9	1,080	1,160	......	......	......	30	1,656	2	2,500	1,200	......	1
St. Clair Coal Co.,	Schuylkill,	9	450	12	1,800	2,250	3	......	......	20	970	4	1,020	500	......	......
Beddall Brothers,	Schuylkill,	......	......	8	460	460	2	......	......	8	230	......	......	......	......	......
D. Shepp Estate,	Schuylkill,	......	......	1	80	80	......	......	......	4	75	......	......	......	......	......
Dunkleberger & Young,	Schuylkill,	......	......	3	105	105	......	......	......	5	105	......	......	......	......	......
Leisenring & Co.,	Schuylkill,	20	300	5	790	1,090	1	......	......	9	950	5	3,400	1,550	......	......
Lytle Coal Co.,	Schuylkill,	......	......	24	3,600	3,600	1	......	......	14	6,875	......	5,000	2,500	......	3
Silverton Coal Co.,	Schuylkill,	8	240	3	360	600	......	......	......	10	542	2	2,700	1,920	......	1
Davis Brothers,	Schuylkill,	......	......	4	240	240	......	......	......	3	130	......	......	......	......	......
E. C. White & Co.,	Schuylkill,	6	180	1	125	305	......	......	......	4	210	3	1,350	400	......	......
Mt. Hope Coal Co.,	Schuylkill,	4	80	6	540	620	2	......	......	10	240	1	150	150	......	......
B. F. Williams,	Schuylkill,	......	......	4	600	600	......	......	......	5	500	1	408	300	......	1
East Ridge Coal Co.,	Schuylkill,	......	......	6	570	570	......	......	......	14	700	2	500	300	......	......
Pine Hill Coal Co.,	Schuylkill,	......	......	6	900	900	......	......	2	6	850	1	1,000	600	1	1
Losch, Moore & Co.,	Schuylkill,	......	......	3	150	150	......	......	......	2	100	......	......	......	......	......
Gorman & Compton,	Schuylkill,	......	......	1	90	90	......	......	......	3	90	......	......	......	......	......
Slattery Brothers,	Schuylkill,	......	......	1	75	75	1	......	......	3	90	......	......	......	......	......
Joseph H. Denning,	Schuylkill,	1	20	......	......	20	......	......	......	3	20	......	......	......	......	......
Whims & Hepner,	Schuylkill,	......	......	2	90	90	......	......	......	2	70	......	......	......	......	......
Buck Run Coal Co.,	Schuylkill,	......	......	4	400	400	......	......	......	2	80	1	450	350	......	......
William Cook,	Schuylkill,	......	......	1	50	50	......	......	......	2	25	......	......	......	......	......
Stoddard Coal Co.,	Schuylkill,	4	64	3	280	344	......	......	......	6	181	......	......	......	......	......
Middleport Coal Co.,	Schuylkill,	......	......	3	30	30	......	......	......	1	10	......	......	......	......	......
Smith, Meyers & Co.,	Schuylkill,	......	......	2	250	250	1	......	......	4	120	......	......	......	......	......
Grand total,		286	7,444	257	32,135	39,579	31	......	2	365	30,918	60	58,605	28,362	1	9

TABLE III—Showing the number of each class of employes at each colliery in the Eighth Anthracite District during the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupatinons of Persons Employed Outside.							Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Philadelphia and Reading Coal and Iron Co.																	
West Brookside,	Schuylkill,	6	11	275	192	52	13	282	831	3	14	50	121	3	187	388	1,219
Lincoln,	Schuylkill,	4	4	236	96	43	....	167	550	2	14	36	66	2	88	208	758
Good Spring,	Schuylkill,	2	5	155	35	10	6	70	283	2	7	20	95	2	89	215	498
Otto,	Schuylkill,	2	5	171	55	20	10	107	370	2	8	23	71	2	109	215	585
Phoenix Park No. 3,	Schuylkill,	1	4	116	28	6	5	63	223	1	5	10	55	2	46	119	342
Richardson,	Schuylkill,	1	4	58	14	8	6	35	126	1	7	21	39	2	48	118	244
Glendower,	Schuylkill,	1	4	74	24	17	6	73	199	1	8	26	75	2	98	210	409
Silver Creek,	Schuylkill,	2	11	250	89	30	8	171	561	2	10	23	120	2	109	266	827
Eagle Hill,	Schuylkill,	1	8	267	46	25	6	138	491	2	9	23	131	2	96	263	754
Wadesville,	Schuylkill,	1	3	155	66	13	7	68	313	1	6	19	54	2	46	128	441
Pine Knot,	Schuylkill,	......	......	....	....	....	....	....	....	1	......	.....	....	....	31	32	32
Kalmia washery,	Schuylkill,	......	......	....	....	....	....	....	....	1	......	1	....	2	19	23	23
Anchor washery,	Schuylkill,	......	......	....	....	....	....	....	....	1	1	2	5	1	21	31	31
Total and average,	....	21	59	1,757	645	224	67	1,174	3,947	20	89	254	842	24	987	2,216	6,163
Lehigh Coal and Navigation Co.																	
Colliery No. 8,	Schuylkill,	2	4	103	36	34	20	212	411	1	9	14	76	....	95	195	606
Colliery No. 10,	Schuylkill,	1	4	77	56	36	16	146	336	1	6	22	79	....	70	178	514
Colliery No. 11,	Schuylkill,	1	4	70	23	24	10	130	262	1	8	26	70	....	81	186	448
Colliery No. 12,	Schuylkill,	1	3	53	14	10	5	114	200	1	4	14	54	....	36	109	309
Total and average,	....	5	15	303	129	104	51	602	1,209	4	27	76	279	....	282	668	1,877

Dodson Coal Co. Morea,	Schuylkill,	1	2	84	69	23	7	74	260	1	17	19	105	5	156	303	563
Truman M. Dodson Coal Co. Kaska-William,	Schuylkill,	1	3	90	28	14	2	80	218	2	6	19	60	2	48	137	355
St. Clair Coal Co. St. Clair,	Schuylkill,	2	2	106	69	27	11	24	241	1	9	26	37	3	172	248	489
Beddall Brothers. Greenwood No. 13,	Schuylkill,	1	1	42	14	11	3	18	90	1	5	4	36	2	38	86	176
D. Shepp Estate. East Lehigh,	Schuylkill,	1	1	8	2	3	....	....	15	1	1	2	10	2	6	22	37
Dunkleberger & Young. West Lehigh,	Schuylkill,	1	1	15	3	3	1	3	27	1	2	4	8	2	7	24	51
Leisenring & Co. Oak Hill,	Schuylkill,	1	5	225	52	25	9	42	359	1	7	18	44	11	66	147	506
Lytle Coal Co. Lytle,	Schuylkill,	2	6	209	103	36	9	115	520	2	28	38	78	8	116	270	790
Silverton Coal Co. Silverton,	Schuylkill,	2	3	80	10	22	3	11	131	1	7	9	18	3	31	69	200
Davis Brothers. Ellsworth,	Schuylkill,	1	1	12	18	4	....	3	39	1	2	3	16	2	30	51	93
E. C. White & Co. Howard,	Schuylkill,	1	1	26	4	3	....	3	38	1	2	6	12	2	22	45	83
Mt. Hope Coal Co. Mt. Hope,	Schuylkill,	1	2	2	2	5	....	18	30	2	5	20	20	2	50	99	129
B. F. Williams. Williams,	Schuylkill,	1	2	72	25	5	3	20	128	1	4	6	....	2	27	40	168
East Ridge Coal Co. East Ridge,	Schuylkill,	1	1	65	40	7	2	8	124	1	6	9	46	3	64	129	253
Pine Hill Coal Co. Pine Hill,	Schuylkill,	1	3	106	28	9	3	83	233	1	4	8	58	3	51	125	358
Losch, Moore & Co. Lorberry,	Schuylkill,	1	......	16	6	3	....	....	26	1	1	3	4	1	6	16	42
Gorman & Campion. Bell,	Schuylkill,	1	......	19	4	3	....	8	35	1	2	2	20	2	7	34	69
Slattery Brothers. Tuscarora,	Schuylkill,	1	......	15	5	3	....	1	25	1	1	2	5	1	3	13	38

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Joseph H. Denning. Sebastopol,	Schuylkill,	1	......	3	5	....	....	....	9	1	......	1	3	1	15	21	30
Whims & Hepner. Jugular,	Schuylkill,	......	......	1	6	....	....	....	7	1	1	2	4	....	2	10	17
Buck Run Coal Co. Buck Run,	Schuylkill,	1	1	8	2	4	....	6	22	1	2	4	....	2	24	33	55
William Cook. Oakley,	Schuylkill,	1	......	4	....	1	....	1	7	1	......	1	2	....	1	5	12
Stoddard Coal Co. Wolf Creek washery,	Schuylkill,	......	......	....	....	....	....	....	....	1	1	5	3	1	28	39	39
Middleport Coal Co. Middleport washery,	Schuylkill,	......	......	....	....	....	....	....	....	1	......	1	2	1	21	26	26
Smith, Meyers & Co. Meyers washery,	Schuylkill,	......	......	....	....	....	....	....	....	1	3	5	4	....	23	36	36
Total and average,	....	50	109	3,268	1,269	539	171	2,334	7,740	52	232	547	1,716	85	2,283	4,915	12,655

TABLE III—Continued.

Names of Operators.	County.	Number of Days Worked Each Month in Breaker.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Philadelphia and Reading Coal and Iron Co.,	Schuylkill,	22.55	16.72	19.9	13.12	20.24	21.63	13.67	16.27	19.8	22.58	19.98	17.1	223.56
Lehigh Coal and Navigation Co.,	Schuylkill,	22.1	14.9	15.67	18.67	20.32	17.9	20.25	17.17	13.17	19	13.37	13.6	206.12
Dodson Coal Co.,	Schuylkill,	23.9	20.1	23.2	20	23.8	21.2	19.1	21.2	19.1	21	21.9	18.2	252.8
Truman M. Dodson Coal Co.,	Schuylkill,	21.8	19.2	20.4	20.1	21.8	19.5	19	16.1	18.2	21.8	19.7	15.3	232.9
St. Clair Coal Co.,	Schuylkill,	18	16	17.3	18.5	23.4	21.3	20.5	21.9	20.3	21.6	22.8	18.6	242.2
Beddall Brothers,	Schuylkill,	21.8	15.8	20.6	21.6	22.3	19.8	20.5	17.4	19.0	20.2	18.4	17.4	234.8
D. Shepp Estate,	Schuylkill,	19	18	25	....	....	....	21.7	25.2	22.8	25	13.1	....	169.8
Dunkleberger & Young,	Schuylkill,	20	20	23	13	23	11	13	18	19	19	22	19	220
Leisenring & Co.,	Schuylkill,	22.6	13.5	20.6	9.9	19.8	20.4	15.7	21	19.1	18.3	21.1	10.2	212 2
Lytle Coal Co.,	Schuylkill,	19.6	17.2	17.8	18.6	18.8	18.2	18.3	18.2	17.1	17.4	17.7	13.9	212.8
Silverton Coal Co.,	Schuylkill,	17.6	14.5	20.9	10.2	14.1	15.8	15.5	13.5	16.9	16.7	18	10.6	184.3
Davis Brothers,	Schuylkill,	25.9	19.9	24.8	22	25	25	20.1	25.9	23	26	22.9	22	282.5
E. C. White & Co.,	Schuylkill,	17.4	19.9	21	18	19.4	18.1	11	15.3	16	17.3	16.9	9.5	199.8
Mt. Hope Coal Co.,	Schuylkill,	17	11	16	18	11	10	10	19	13	18	19	11	173
B. F. Williams,	Schuylkill,	....	....	....	5	7	8	10	10	10	10	....	....	60
East Ridge Coal Co.,	Schuylkill,	17.1	10.9	15.5	9.4	15.1	12.3	15.1	15.4	15.1	15.7	13.6	10.5	165.7
Pine Hill Coal Co.,	Schuylkill,	14.7	9.7	16.8	19.6	16 9	18.3	16.1	15.3	16.1	14.5	16	12.4	186.4
Losch, Moore & Co.,	Schuylkill,	....	....	....	....	....	....	....	....	12.2	14.5	22	17	65.7
Gorman & Campion,	Schuylkill,	20.5	18.5	21	10	18	21.5	15	17	18.5	22	19	16	217
Slattery Brothers,	Schuylkill,	20	13	18	7	19	16	16	16	16	19	19	13	192
Joseph H. Denning,	Schuylkill,	22	21	20	20	20	19	20	20	21	23	21	19	246
Whims & Hepner,	Schuylkill,	12	....	....	....	....	....	....	....	....	....	....	....	12
Buck Run Coal Co.,	Schuylkill,	....	....	....	....	....	....	....	....	....	....	....	....	....
William Cook,	Schuylkill,	16	11.5	17	6	15	12	10	13	3	5	22	21	151.5
Stoddard Coal Co.,	Schuylkill,	10.9	9.4	13.3	12.4	19.7	18.5	15.2	16.2	16.7	7.2	11.1	19.8	170.4
Middleport Coal Co.,	Schuylkill,	13	....	12	17	19	2	....	15	17	22	10	....	127
Smith, Meyers & Co.,	Schuylkill,	9	....	5	9	18	11	8	18	14	19	18	6	138
		....	....	....	....	....	....	....	....	....	....	....	....	*187.63

*Average.

TABLE IV—List of fatal accidents that occurred in and about the mines of the Eighth Anthracite District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	3	Thomas Leonard, ...	English, ...	Att'dg shakers,	16	S.	....	....	St. Clair, ...	Schuylkill,	Killed by being caught by revolving shaft.
	22	James Motula, ...	Italian, ...	Miner, ...	42	M.	1	6	Wadesville, ...	Schuylkill,	Killed by a fall of coal.
	31	Andrew Setlock, ...	Pole, ...	Laborer, ...	41	M.	1	2	St. Clair, ...	Schuylkill,	Fatally injured by a fall of slate.
Feb.	5	Charles Wolf, ...	American, ...	Laborer, ...	22	S.	....	....	Lincoln, ...	Schuylkill,	Killed by a piece of frozen dirt rolling on him on dirt bank.
	18	Milton Koenig, ...	American, ...	Fireman, ...	33	S.	....	....	Greenwood, ...	Schuylkill,	Scalded by steam from a boiler explosion. Died Feb. 23d.
March	9	Simon Roberts, ...	Pole, ...	Laborer, ...	26	S.	....	....	Kaska-William, ...	Schuylkill,	Killed by being caught between a dirt dumper and post.
	16	Anthony Lamon, ...	Lithuanian, ..	Miner, ...	41	M.	1	....	Phoenix Park, ...	Schuylkill,	Killed by a fall of slate.
	22	George Ruketa, ...	Hungarian, ...	Laborer, ...	38	M.	1	2	West Brookside, ..	Schuylkill,	Killed by falling in front of a car.
April	3	Martin Romochski,	Lithuanian, ..	Miner, ...	50	M.	1	5	Lytle, ...	Schuylkill,	Killed by explosion of a keg of powder.
	9	August Nehenkie, ...	German, ...	Laborer, ...	24	S.	....	....	West Brookside, ...	Schuylkill,	Fatally injured by being caught between a car and prop.
May	3	Victor Haertter, ...	American, ...	Miner, ...	27	M.	1	1	West Brookside, ...	Schuylkill,	Killed by explosion of dynamite.
	14	Stiney Bosoc, ...	Pole, ...	Miner, ...	30	S.	....	....	Eagle Hill, ...	Schuylkill,	Killed by a fall of bone.
	29	William Klinger, ...	American, ...	Battery starter,	27	S.	....	....	West Brookside, ...	Schuylkill,	Killed by a rush of stuff inside of battery.
June	26	Joseph Myers, ...	American, ...	Miner, ...	26	M.	1	1	West Brookside, ...	Schuylkill,	Fatally burned by explosion of powder.
July	11	Miles Underkoffler,	German, ...	Miner, ...	37	M.	1	7	West Brookside, ...	Schuylkill,	Killed by a piece of rock falling on him.
Aug.	10	Thomas Bietsky, ...	Pole, ...	Miner, ...	48	M.	1	8	Morea, ...	Schuylkill,	Killed by a fall of coal.
Sept.	5	Charles B. Corlley, .	American, ...	Fireman, ...	22	S.	....	....	No. 11 col., ...	Schuylkill,	Killed by being struck by piece of fly wheel.
	9	James Hefflinger, ...	German, ...	Bell boy, ...	13	S.	....	....	No. 12 col., ...	Schuylkill,	Killed by being caught in elevators in the breaker.
	24	John Marko, ...	Pole, ...	Miner, ...	50	M.	1	2	St. Clair, ...	Schuylkill,	Skull fractured by a fall of coal.
	27	Roland Williams, ...	Welsh, ...	Miner, ...	45	M.	1	2	Colliery No. 8, ...	Schuylkill,	Burned by an explosion of gas.
Oct.	7	Joseph Venarskie, ...	Pole, ...	Laborer, ...	23	M.	1	....	Morea, ...	Schuylkill,	Killed by falling down shaft.
	9	John Neider, ...	American, ...	Driver, ...	18	S.	....	....	Lincoln, ...	Schuylkill,	Killed by falling under cars.
	10	George Phillips, ...	American, ...	Miner, ...	53	M.	1	4	Oak Hill, ...	Schuylkill,	Killed by a shot.
	11	Anthony Malouski, .	Pole, ...	Miner, ...	35	M.	1	....	Greenwood, ...	Schuylkill,	Killed by a fall of coal.
	18	Michael Stone, ...	Pole, ...	Laborer, ...	21	S.	....	....	Glendower, ...	Schuylkill,	Killed; struck by old iron thrown from breaker.

	22	George Freeman,	American,	Feeding screen	15	S.	....	....	Mt. Hope,	Schuylkill,	Killed; caught in a revolving shaft in the breaker.
Nov.	13	Eugene Snyder,	American,	Miner,	25	S.	....	....	West Brookside,	Schuylkill,	Killed by a fall of slate.
	14	Irvin Stickler,	American,	Miner,	26	S.	....	....	West Brookside,	Schuylkill,	Killed by falling down the slope.
	14	William Neithamer,	American,	Repairman,	26	S.	....	....	West Brookside,	Schuylkill,	Killed at the bottom of slope by timber.
	15	William Yencofsky,	Lithuanian,	Laborer,	20	S.	....	....	Lytle,	Schuylkill,	Killed by falling down the shaft.
	19	John Igo,	American,	Miner,	28	S.	....	....	Silver Creek,	Schuylkill,	Burned by an explision of gas.
Dec.	4	Joseph Nicholas,	Italian,	Headman,	21	S.	....	....	St. Clair,	Schuylkill,	Leg crushed between cars.
	13	Adam Holas,	Slav,	Miner,	32	M.	1	....	Wadesville,	Schuylkill,	Killed by a fall of coal.
	19	George Eberts,	American,	Carpenter,	21	S.	....	....	Colliery No. 8,	Schuylkill,	Killed by falling down the shaft.
	30	Charles Curticulas,	Pole,	Miner,	33	M.	1	....	Wadesville,	Schuylkill,	Killed by premature explosion of a blast.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Eighth Anthracite District for the year ending December 31, 1901.

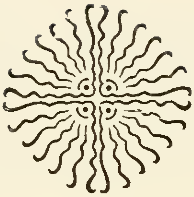
Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	2	John Shylock,	Hungarian,	Miner,	26	S.	Morea,	Schuylkill,	Foot severely injured by a fall of rock.
	2	George Yusites,	Lithuanian,	Miner,	35	S.	Oak Hill,	Schuylkill,	Face and hands burned by an explosion of gas.
	5	Anthony Imiscoffski,	Hungarian,	Driver,	17	S.	Eagle Hill,	Schuylkill,	Leg and hand broken by falling under cars.
	15	Peter Lomalavage,	Pole,	Miner,	26	S.	Kaska-William,	Schuylkill,	Leg broken by a fall of slate.
	16	William Baruchka,	Lithuanian,	Miner,	24	S.	Silver Creek,	Schuylkill,	Burned by an explosion of gas.
	18	William Epler,	American,	Driver,	16	S.	Phoenix Park No. 3,	Schuylkill,	Severely injured by falling in front of mine car.
	22	Charles Deorr,	American,	Laborer,	44	M.	West Brookside,	Schuylkill,	Arm broken; struck by hammer.
	23	William J. Jones,	Welsh,	Patcher,	16	S.	Morea,	Schuylkill,	Arm broken while trying to get on cars.
	28	Thomas Flanigan,	American,	Door boy,	16	S.	Silver Creek,	Schuylkill,	Foot injured between cars.
Feb.	6	John Cooney,	Hungarian,	Miner,	40	M.	Silver Creek,	Schuylkill,	Severely injured by explosion of dynamite.
	6	Walter Leonard,	Irish,	Loader boss,	32	M.	Silver Creek,	Schuylkill,	Severely injured by explosion of dynamite.
	8	George Kelner,	American,	Miner,	24	M.	West Brookside,	Schuylkill,	Severely injured by a fall of coal.
	14	William A. Nye,	American,	Miner,	38	M.	Silverton,	Schuylkill,	These three men were burned by an explosion of gas.
	14	Henry Leininger,	American,	Miner,	40	M.	Silverton,	Schuylkill,	
	14	Anth Carpelski,	Pole,	Miner,	27	S.	Silverton,	Schuylkill,	
	15	Peter Harris,	Pole,	Miner,	39	M.	Pine Hill,	Schuylkill,	Severely injured by a fall of coal.
	18	Charles Klusski,	Pole,	Miner,	31	M.	Colliery No. 12,	Schuylkill,	Kinnski and Fritz were burned by an explosion of gas. Hamm and Boyle were burned in the same place in evening.
	18	William Fritz,	Pole,	Laborer,	20	S.	Colliery No. 12,	Schuylkill,	
	18	Jonas Hamm,	American,	Miner,	40	M.	Colliery No. 12,	Schuylkill,	
	18	Daniel Boyle,	American,	Laborer,	25	S.	Colliery No. 12,	Schuylkill,	
	22	Mathew Horan,	American,	Starter,	32	S.	Richardson,	Schuylkill,	Head severely injured by a fall of slate.
	26	Dennis Boner,	American,	Miner,	30	M.	Colliery No. 10,	Schuylkill,	Severely injured by flying coal from a shot.
March	11	Edward Quirk,	American,	Miner,	45	M.	Richardson,	Schuylkill,	Leg broken by a fall of coal.
	13	John Witkonsky,	Lithuanian,	Laborer,	25	S.	Oak Hill,	Schuylkill,	Shoulder fractured by a fall of coal.
	20	Joseph Lyons,	American,	Miner,	35	M.	Lincoln,	Schuylkill,	Collar bone broken by shot.
	20	W. H. Kuntzelman,	American,	Laborer,	27	M.	West Brookside,	Schuylkill,	Severely injured by being run over by cars.
	29	John McNeal,	American,	Laborer,	49	M.	West Brookside,	Schuylkill,	Arm broken; fell down a schute.

April	10	Philip Wertz,	American,	Miner,	25	S.	Lincoln,	Schuylkill,	Collar bone broken while starting coal.
	12	Simon Kilba,	Pole,	Miner,	36	S.	Kaska-William,	Schuylkill,	Head injured by coal from a shot.
	13	Frank Bechtel,	American,	Miner,	27	M.	West Brookside,	Schuylkill,	Back injured by a fall of rock.
	23	Joseph Norris,	Pole,	Miner,	35	M.	Lytle,	Schuylkill,	Burned by an explosion of gas.
	23	Charles Tyney,	Pole,	Miner,	30	S.	Lytle,	Schuylkill,	
	23	Toney Rose,	Italian,	Fan turner,	26	S.	Lytle,	Schuylkill,	
	24	Charles Zubloski,	Lithuanian,	Miner,	30	S.	Lytle,	Schuylkill,	Leg broken by a fall of coal.
	24	George Higgins,	Irish,	Driver,	21	S.	St. Clair,	Schuylkill,	Severely injured by falling in front of cars.
	25	George Reinoehl,	American,	Starter,	44	M.	West Brookside,	Schuylkill,	Head and hand injured by shot.
	27	David Daly,	American,	Slate picker,	13	S.	Colliery No. 10,	Schuylkill,	Leg broken by a screen shaft.
	29	Joseph Zeiders,	American,	Miner,	31	M.	West Brookside,	Schuylkill,	Leg broken by a fall of coal.
	30	Gomer Jones,	Welsh,	Miner,	35	M.	Morea,	Schuylkill,	Arm broken by coal at a battery.
May	1	Harry Warner,	American,	Miner,	38	M.	Phoenix Park No. 3,	Schuylkill,	Leg broken by a fall of rock.
	10	William Carlin,	American,	Miner,	48	M.	Eagle Hill,	Schuylkill,	Leg broken by coal rolling on it.
	15	John Fisher,	American,	Laborer,	20	S.	Lincoln,	Schuylkill,	Ankle dislocated; caught between cars.
	17	Steve Bodash,	Hungarian,	Miner,	27	S.	St. Clair,	Schuylkill,	Back injured by a fall of coal.
	18	Mich. Fetterman,	Pole,	Miner,	35	S.	Glendower,	Schuylkill,	Injured by falling down a manway.
	18	Edward Connelly,	Irish,	Driver,	23	S.	Eagle Hill,	Schuylkill,	Injured by being kicked by a mule.
	18	John Megok,	Slav,	Driver,	19	S.	Mt. Hope,	Schuylkill,	Severely injured by car jumping track.
	18	John Simodoffsky,	Pole,	Miner,	32	S.	Eagle Hill,	Schuylkill,	Injured by coal from a shot.
	20	John Farrell,	American,	Laborer,	32	S.	Otto,	Schuylkill,	Arm broken by a fall of slate.
	20	Pat Reilly,	American,	Laborer,	21	S.	Morea,	Schuylkill,	Leg injured by jumping on a blasting needle.
	21	Chas. Boone,	American,	Miner,	33	M.	West Brookside,	Schuylkill,	Ankle broken by a piece of coal falling on it.
	22	John L. Snyder,	American,	Miner,	40	M.	West Brookside,	Schuylkill,	Back injured by coal falling on him.
	22	Andrew Ramah,	Hungarian,	Driver,	33	M.	Morea,	Schuylkill,	Leg broken; fell in front of cars.
	23	Donato Angelo,	Italian,	Laborer,	31	S.	Pine Hill,	Schuylkill,	Head severely injured by coal from a shot.
	28	John Kestick,	Pole,	Driver,	22	S.	Morea,	Schuylkill,	Severely injured by being caught between wagons and side of tunnel.
June	4	George Ormfra,	Greek,	Miner,	30	M.	Oak Hill,	Schuylkill,	Hip broken by a fall of clod.
	8	John Nicolidi,	Austrian,	Tunnel contractor,	31	M.	Silver Creek,	Schuylkill,	Back and arms injured by premature blast.
	12	Ignus Kazuer,	Pole,	Loader,	38	M.	Morea,	Schuylkill,	Hip fractured; fell under car.
	13	Joseph Crowe,	American,	Door boy,	15	S.	Phoenix Park No. 3,	Schuylkill,	Hand mashed while trying to remove a block from under a car wheel.
	13	Henry Knauber,	American,	Miner,	21	S.	Otto,	Schuylkill,	One leg cut off and the other broken by a fall of slate.
	20	John Yerker,	American,	Coal pusher,	17	S.	Lincoln,	Schuylkill,	Foot mashed by a fall of slate.
	22	Anthony Rantha,	Pole,	Driver,	22	S.	Kaska-William,	Schuylkill,	Leg broken; fell under a mine car.
	25	Thomas McDonald,	American,	Carpenter,	45	M.	Glendower,	Schuylkill,	Eye and face burned by caustic soda, which he overturned.
	27	Oliver Machamer,	American,	Fire boss,	37	M.	West Brookside,	Schuylkill,	Foot broken by a prop falling on it.
	27	Henry Schock,	American,	Miner,	25	M.	Lincoln,	Schuylkill,	Leg broken by a piece of coal falling on it.
	29	Tony Simmons,	Italian,	Laborer,	36	M.	West Brookside,	Schuylkill,	Foot cut off by fall of rock.
July	9	Adam Ringcavage,	Pole,	Miner,	35	S.	Lytle,	Schuylkill,	Burned by an explosion of gas at face of gangway, while firing a shot.
	9	George Patrice,	Pole,	Laborer,	25	S.	Lytle,	Schuylkill,	
	9	Peter Mastopsky,	Pole,	Laborer,	25	S.	Lytle,	Schuylkill,	
	11	Patrick Purcell,	American,	Miner,	40	M.	Glendower,	Schuylkill,	Leg broken by a fall of coal.
	15	Homer Thompson,	American,	Miner,	31	M.	Lincoln,	Schuylkill,	Three ribs broken by coal from a shot.
	15	John Thompson,	American,	Miner,	29	M.	Lincoln,	Schuylkill,	One finger blown off by coal from a shot.

TABLE V—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
	16	Charles Lukenbill,	American,	Miner,	25	S.	Pine Hill,	Schuylkill,	Back and hips injured by a fall of coal.
	16	Charles Derr,	American,	Loader,	21	S.	Phoenix Park No. 3,	Schuylkill,	Leg fractured by a car leaving track.
	22	Joseph Jones,	English,	Miner,	37	M.	Morea,	Schuylkill,	Head and leg injured by a fall of clod.
	22	Michael Moore,	Irish,	Miner,	29	S.	Pine Hill,	Schuylkill,	Hip dislocated by a fall of coal.
	26	Jacob Clouser,	American,	Miner,	46	M.	Good Spring,	Schuylkill,	Injured by falling down a manway.
	26	Philip Fasinko,	Pole,	Miner,	26	M.	St. Clair,	Schuylkill,	Injured by being caught by a mine car which jumped the track.
Aug.	14	John Eckardt,	German,	Loader,	29	S.	Colliery No. 10,	Schuylkill,	Leg broken by a piece of coal falling from schute.
	16	John Dodeck,	Pole,	Loader,	21	S.	Silver Creek,	Schuylkill,	Leg broken while trying to uncouple wagons.
	19	George Jenkins,	American,	Driver,	19	S.	Lytle,	Schuylkill,	Head cut and body bruised by a car.
	30	Richard Thomas,	Welsh,	Miner,	44	M.	Silverton,	Schuylkill,	Burned by an explosion of gas.
	30	John Bowen,	Welsh,	Miner,	46	M.	Silverton,	Schuylkill,	Burned by an explosion of gas.
Sept.	9	Peter Essacavage,	Pole,	Miner,	25	S.	Silver Creek,	Schuylkill,	Arm, hands and face injured by coal from a blast.
	13	Frank Urban,	Pole,	Miner,	36	S.	St. Clair,	Schuylkill,	Back injured by a fall of slate.
	17	John Bergan,	Irish,	Slate picker,	13	S.	Richardson,	Schuylkill,	Skull fractured; he fell while starting coal.
	23	James Tobin,	American,	Slate picker,	16	S.	Glendower,	Schuylkill,	Arm broken by a rope wheel in breaker.
	25	Peter Smith,	German,	Laborer,	26	M.	West Brookside,	Schuylkill,	Leg broken while spragging a wagon; he fell under the wheels.
Oct.	1	John Boyle,	Irish,	Laborer,	48	S.	Silver Creek,	Schuylkill,	Arm broken while unloading timber from mine car.
	3	Bromus Burkot,	Pole,	Driver,	21	S.	Silver Creek,	Schuylkill,	Arm broken; caught between wagon and door frame.
	4	Joseph Gustitus,	Pole,	Miner,	37	S.	Kaska-William,	Schuylkill,	Leg broken; a lump of coal fell off wagon.
	6	Thomas Morgan,	American,	Driver,	25	S.	Wadesville,	Schuylkill,	Arm broken; caught between car and brattice.
	6	William Brown,	American,	Driver,	17	S.	Wadesville,	Schuylkill,	Foot injured while getting off car.
	7	John Carpwitch,	Lithuanian,	Miner,	39	M.	Silverton,	Schuylkill,	Leg broken by coal falling from upper side of heading.
	7	John Popoka,	Lithuanian,	Miner,	30	S.	Silverton,	Schuylkill,	Body injured by coal falling from upper side of heading.
	12	John Thomas,	Welsh,	Driver,	26	S.	Silver Creek,	Schuylkill,	Leg broken while unhitching mule.

	17	Tresco Goyda,	Hungarian,	Laborer,	24	S.	Morea,	Schuylkill,	Arm broken by coal from a blast.
	19	George Garbel,	Hungarian,	Loco. helper,	17	S.	St. Clair,	Schuylkill,	Ankle broken; was sliding his foot along rail in front of engine.
	23	Lawrence Ryan,	American,	Driver,	18	S.	Lytle,	Schuylkill,	Hips and legs injured; caught between car and door frame.
Nov.	5	Andrew Antalowsky,	Pole,	Laborer,	25	M.	Morea,	Schuylkill,	Head injured by a fall of coal.
	12	Edward Williams,	Welsh,	Miner,	60	S.	Williams,	Schuylkill,	Leg injured by fall of coal.
	14	Thomas Smith,	German,	Loader,	26	S.	Colliery No. 10,	Schuylkill,	Hands and face burned by an explosion of gas.
	14	Patrick Boner,	Irish,	Loader,	20	S.	Colliery No. 10,	Schuylkill,	Hands and face burned by an explosion of gas.
	14	James McNellis, Jr.,	Irish,	Door boy,	15	S.	Colliery No. 10,	Schuylkill,	Hands and face burned by an explosion of gas.
	14	Samuel Dunmoyer,	American,	Miner,	47	M.	West Brookside,	Schuylkill,	Severely injured by falling down slope.
	18	Daniel Poffenberger,	American,	Laborer,	27	M.	West Brookside,	Schuylkill,	Hand injured while hitching a mule.
	19	Thomas Igo,	American,	Miner,	48	W.	Silver Creek,	Schuylkill,	Hands and face burned by an explosion of gas.
	20	Maurice Finley,	American,	Miner,	40	S.	Greenwood,	Schuylkill,	Wrist severely cut by coal falling on it.
	23	Andrew Balsis,	Pole,	Miner,	39	S.	Wadesville,	Schuylkill,	Hip injured by a piece of coal striking him.
	26	Henry Bretz,	American,	Miner,	35	M.	Good Spring,	Schuylkill,	Back severely injured by a fall of slate.
	29	John Betz,	American,	Foreman on stripping.	45	M.	Mt. Hope,	Schuylkill,	Three ribs dislocated; he slipped on stripping.
Dec.	10	Michael Perridge,	Slav,	Miner,	37	S.	East Ridge,	Schuylkill,	Legs injured by a fall of coal.
	14	George Utsilin,	Italian,	Laborer,	22	M.	St. Clair,	Schuylkill,	Leg broken while unloading timber from a railroad car.
	19	Lewis Smith,	Russian,	Miner,	29	M.	Wadesville,	Schuylkill,	Leg broken by fall of coal.
	27	William Prosser,	American,	Laborer,	25	M.	Pine Hill,	Schuylkill,	Leg broken; he was hitching a mule to a car.
	30	John Shilcavage,	Lithuanian,	Miner,	27	S.	Lytle,	Schuylkill,	Two ribs broken and back injured by a fall of slate.
	31	Faso Sowshak,	Pole,	Laborer,	25	S.	Morea,	Schuylkill,	Leg broken by a fall of coal.



BITUMINOUS MINE DISTRICTS.

FIRST BITUMINOUS DISTRICT.

ALLEGHENY, FAYETTE, WASHINGTON AND WESTMORELAND COUNTIES.

Monongahela, Pa., March 31, 1902.

Hon. James W. Latta, Secretary of Internal Affairs:

Sir: In accordance with an act, entitled "An act relating to bituminous coal mines and providing for the lives, health, safety and welfare of persons employed therein," I hereby present my annual report as Inspector of Mines for the First Bituminous Coal District.

Eight new mines have been opened; one re-opened and one abandoned during the year.

Each mine in the district has received attention in the descriptive portion of this report.

Aside from Table No. 4 a statement of each fatal accident is given under the head of "Fatal Accidents."

In addition to the usual ones, tables in regard to ventilation, the use of mining machines, etc., are inserted.

On examination of Table 4 and 5 it will be found that 183 accidents occurred in the district during the year, of which forty-one proved fatal, being an excess of four over the number for the year 1900. There were 142 non-fatal ones in 1901.

Total production of coal for 1900, was 8,654,376 tons.

Total production of coal for 1901, as reported to this office was 8,108,658 tons, being a decrease in production of 545,718 tons in 1901, from that of 1900.

The number of wives left widows was twenty-seven, and of orphans fifty-six.

In the report of 1900, it was stated that in the case of the Commonwealth against William Watkins, mine foreman of the Tremont mine, a verdict of guilty was rendered and the costs placed upon the county. This was an error, the defendant having paid the costs in the matter.

In noting the condition of the several mines in the district, the intent and purpose of the act is made the criterion in the making up of the report.

All of which is respectfuly submitted.

HENRY LOUTTIT,
Inspector of Mines.

Examination of Candidates for Mine Foreman.

The annual examination was held in council chambers, at Monongahela, January 2, 3 and 4. The board of examiners was D. B. Black burn; operator; J. P. N. Coulter, miner and Henry Louttit, Mine Inspector. Thirty-six applicants appeared before the board, of which nine were successful, viz:

First Grade: John Black, James Stevenson, William Pursglove, E. L. Morris, George Stark, William Blower, Enoch Blower and John Dunlap. Second Grade: John L. Rea.

Mining Statistics.

Number of mines in the district,	86
Number of mines in operation during 1901,	64
Number of tons of coal produced,	8,108,658
Number of tons shipped,	7,975,495
Number used for steam at mines,	101,250
Number sold to employes and others,	31,913
Number of persons employed inside the mines,	8,993
Number of persons employed outside the mines,	1,202
Number of fatal accidents,	41
Number of tons of coal produced per fatal accident,	109,967
Number of persons employed per fatal accident,	249
Number of non-fatal accidents,	142
Number of tons of coal produced per non-fatal accident,	57,104
Number of persons employed per non-fatal accident,	72
Number of wives made widows by accidents,	27
Number of orphans by accidents,	56
Number of kegs of powder used,	43,884
Number of pounds of dynamite used,	29,240
Number of days worked,	12,018
Number of cylindrical boilers,	22
Number of tubular boilers,	151
Number of steam locomotives,	2
Number of electric locomotives,	22
Number of new mines opened,	8

TABLE A—Production of Coal, Number of Persons Employed by Each Company During the Year 1901, and the Average Number of Tons Produced per Employe.

Name of Company.	Number of tons produced.	Number of persons employed.
Monongahela River Consolidated Coal and Coke Co.,	3,334,058	4,595
Pittsburg Coal Company,	1,772,029	1,975
Vesta Coal Company,	1,282,791	1,103
Charleroi Coal Works,	210,103	213
Stockdale Coal Company,	209,114	118
Ella Coal Company,	187,033	233
Shoenberger Gas Coal Company,	184,455	218
James W. Ellsworth & Company,	129,866	324
Bunola Mining Company,	119,080	121
John H. Jones,	98,503	163
C. Jutte & Company,	96,082	158
Hazel Kirk Gas Coal Company,	75,302	167
Clyde Coal Company,	66,418	74
Henderson Coal Company,	65,240	61
Marine Coal Company,	63,920	175
People's Coal Company,	52,540	134
Morris Bailey Coal Company,	47,901	91
A. R. Budd,	47,250	119
Star Coal Company,	41,869	115
B. Braznell & Son,	25,109	38
Total,	8,108,658	10,195

Number of tons produced per employe, 795.4.

TABLE B—Number of Fatal Accidents and Tons of Coal Produced per Life Lost.

Name of Company.	Number of fatal accidents.	Number of tons produced per life lost.
Monongahela River Consolidated Coal and Coke Company,	20	166,773
Pittsburg Coal Company,	6	295,338
Vesta Coal Company,	2	641,395
Charleroi Coal Works,	2	105,051
Stockdale Coal Company,	3	69,704
Ella Coal Company,	1	187,033
Shoenberger Gas Coal Company,	....	184,455
James W. Ellsworth & Company,	2	64,934
Bunola Mining Company,	....	119,080
John H. Jones,	1	98,503
C. Jutte & Company,	....	96,082
Hazel Kirk Gas Coal Company,	2	37,651
Clyde Coal Company,	....	66,418
Henderson Coal Company,	1	65,240
Marine Coal Company,	1	63,920
People's Coal Company,	....	52,540
Morris Bailey Coal Company,	....	47,901
A. R. Budd,	....	47,250
Star Coal Company,	....	41,869
B. Braznell & Son,	....	25,109
Total and average,	41	....

TABLE C—Showing the Number of Fatal and Non-Fatal Accidents and the Number of Tons of Coal Produced per Accident.

Name of Company.	Number of accidents.	Number of tons of coal produced per accident.
Monongahela River Consolidated Coal and Coke Company,	87	38,222
Pittsburg Coal Company,	42	42,191
Vesta Coal Company,	7	183,256
Charleroi Coal Works,	2	105,051
Stockdale Coal Company,	6	34,852
Ella Coal Company,	9	20,781
Shoenberger Gas Coal Company,	5	36,891
James W. Ellsworth & Company,	3	43,289
Bunola Mining Company,	...	119,080
John H. Jones,	2	49,251
C. Jutte & Company,	1	96,082
Hazel Kirk Gas Coal Company,	6	12,550
Clyde Coal Company,	1	66,418
Henderson Coal Company,	1	65,240
Marine Coal Company,	5	12,784
People's Coal Company,	2	26,270
Morris Bailey Coal Company,	1	47,901
A. R. Budd,	...	47,250
Star Coal Company,	2	20,934
B. Braznell & Son,	...	25,109
W. H. Flint & Company,	1	...
Total and average,	183	...

TABLE D—Classification of Accidents.

Classification of Accidents.	Killed or fatally injured.	Injured.	Total.
Caught between car and pillar,	1	4	5
By falls of coal,	...	12	13
By falls of slate,	25	48	75
By falls of coal and slate,	...	6	9
By falls of roof coal,	...	3	3
By falls of horse-back,	1	3	4
Struck by an ascending cage,	2	...	2
By cars,	1	25	26
By mining machines,	...	5	5
By flying coal from a shot,	...	3	3
By falls of rock,	1	1	2
By being struck by posts,	...	2	3
Caught between car and post,	...	2	2
By being kicked by mules,	1	2	3
By being caught between car and rib,	...	3	3
Burned by powder through a missed shot,	...	1	1
Struck by a descending cage,	...	2	2
Caught between motor and entry pillar,	...	1	1
Burned by powder,	...	2	2
By an explosion of fire damp,	...	1	1
By a fall of upper slate,	1	...	1
Struck by sliding slate,	1	...	1
Struck by empty dilly trip,	1	...	1
By premature blast,	1	...	1
By runaway car,	1	...	1
By a fall of shale,	1	...	1
By a fall of sandstone,	1	...	1
Miscellaneous,	...	16	16
Total,	41	142	183

Table E—Occupations of Persons Killed and Injured.

Occupation.	Killed or fatally injured.	Injured.	Total.
Miners,	35	68	108
Trappers,		1	1
Brakeman,		1	1
Blacksmith,		1	1
Cager,		1	1
Drivers,	2	23	25
Loaders,	1	20	21
Engineer,		1	1
Cutter,		1	1
Pick boy,		1	1
Machine men,		2	2
Stone Mason,		1	1
Mine foreman,		1	1
Timbermen,		2	2
Roadsmen,		3	3
Wiremen,		3	3
Carpenter,		1	1
Pumpman,		1	1
Day hand,	1		1
Machine helpers,	1	1	2
Boss driver,		1	1
Checkweighman,	1		1
Motorman,		1	1
Driver and miner,		1	1
Tripper,		1	1
Gripper,		1	1
Trip catcher,		1	1
Switchman,		1	1
Machine runners,		2	2
Total,	41	142	183

TABLE F—Nationalities of Persons Killed or Injured.

Nationality.	Killed.	Injured.	Total.
Americans,	5	54	62
English,	4	11	15
Welsh,		2	2
Scotch,		5	5
Irish,	1	5	6
German,	2	4	6
Poles,	6	8	14
Slavs,	8	18	27
Austrians,	3	2	6
Hungarians,	4	8	12
Italians,	1	22	23
French,	2		2
Belgians,		1	1
Bohemians,	1		1
Finlanders,	3	2	5
Canadian,	1		1
Total,	41	142	183

Production of Coal in Tons by Each Operator During the Year 1901.

Monongahela River Consolidated Coal and Coke Company,	3,334,053
Pittsburgh Coal Company,	1,772,029
Vesta Coal Company,	1,282,791
Charleroi Coal Works,	210,103
Stockdale Coal Company,	209,114
Ella Coal Company,	187,033
Shoenberger Gas Coal Company,	184,455
James W. Ellsworth & Co.,	129,866
Bunola Mining Company,	119,080
John H. Jones,	98,503
C. Jutte & Co.,	96,082
Hazel Kirk Gas Coal Company,	75,302
Clyde Coal Company,	66,418
Henderson Coal Company,	65,240
Marine Coal Company,	63,920
People's Coal Company,	52,540
Morris Bailey Coal Company,	47,901
A. R. Budd,	47,250
Star Coal Company,	41,869
B. Braznell & Son,	25,109
Total,	8,108,658

Table Giving Name of Mine Type and Number of Mining Machines in use and Motive Power for Their Operation.

Name of Mine.	Type of machine.	Number of each type.	Motive power used.
Arnold No. 1,	Jeffry,	6	Electricity.
Arnold No. 2,	Jeffry,	3	Electricity,
Banner,	Link belt,	4	Electricity.
Cleveland,	Jeffry,	7	Electricity.
Courtney,	Jeffry,	2	Electricity.
Equitable,	Jeffry,	4	Electricity.
Eclipse,	Morgan-Gardner,	8	Electricity.
Little Squaw,	Jeffry,	3	Electricity.
Manown,	Jeffry,	6	Compressed air.
Manown,	Sullivan,	4	Compressed air.
North Webster,	Jeffry,	5	Electricity.
Nottingham,	Morgan-Gardner,	5	Electricity.
Somers No. 2,	Morgan-Gardner,	7	Electricity.
Somers No. 3,	Morgan-Gardner,	1	Electricity.
Somers No. 5,	Morgan-Gardner,	1	Electricity.
Black Diamond,	Jeffry,	4	Electricity.
Beaumont,	Jeffry,	2	Electricity.
Camden,	Morgan-Gardner,	3	Electricity.
Coal Bluff,	Morgan-Gardner,	6	Electricity.
Coal Bluff,	Jeffry,	1	Electricity.
Cincinnati,	Morgan-Gardner,	7	Electricity.
Catsburg,	Jeffry,	8	Electricity.
Crescent,	Jeffry,	4	Electricity.
Eclipse,	Morgan-Gardner,	8	Electricity.
Fayette City,	Harrison,	8	Compressed air.
Gallatin,	Jeffry,	6	Electricity.
Ivill,	Jeffry,	4	Electricity.
Knob,	Jeffry,	6	Electricity.
Little Redstone,	Morgan-Gardner,	5	Electricity.
Mongah,	Morgan-Gardner,	4	Compressed air.
Mongah,	Jeffry,	3	Electricity.
Mongah,	Brown,	1	Electricity.
Milesville,	Morgan-Gardner,	6	Electricity.
Risher,	Morgan-Gardner,	6	Electricity.
Rostraver,	Jeffry,	3	Electricity.
Tremont,	Jeffry,	6	Compressed air.
Vigilant,	Jeffry,	4	Electricity.
Vigilant,	Brown,	1	Electricity.
Ellsworth No. 1,	Jeffry,	6	Compressed air.
Ellsworth No. 1,	Sullivan,	4	Compressed air.
Ellsworth No. 1,	Ingersoll,	6	Compressed air.
Ellsworth No. 2,	Jeffry,	3	Compressed air.
Ellsworth No. 2,	Sullivan,	1	Compressed air.
Ellsworth No. 2,	Ingersoll,	2	Compressed air.
Ellsworth No. 3,	Jeffry,	3	Compressed air.
Ellsworth No. 3,	Ingersoll,	2	Compressed air.
Ellsworth No. 4,	Jeffry,	1	Compressed air.
Ellsworth No. 4,	Ingersoll,	1	Compressed air.
Vesta No. 1,	Jeffry,	1	Compressed air.
Vesta No. 1,	Sullivan,	2	Compressed air.
Vesta No. 1,	Ingersoll,	5	Compressed air.
Vesta No. 1,	Harrison,	16	Compressed air.
Vesta No. 2,	Ingersoll,	8	Compressed air.
Bertha,	Jeffry,	2	Compressed air.
Bertha,	Link belt,	4	Electricity.
Blanche,	Sullivan,	3	Compressed air.
	Ingersoll,	2	Compressed air.
Blanche,	H. S. & I.,	1	Compressed air.
Bunola,	Jeffry,	5	Electricity.
Budd,	Morgan-Gardner,	7	Electricity.
Charleroi,	Jeffry,	3	Electricity.
Clyde,	Jeffry,	3	Electricity.
Clinton,	Morgan-Gardner,	5	Electricity.
Ella,	Morgan-Gardner,	4	Electricity.
Ella,	Jeffry,	1	Electricity.
Hazel Kirk,	Goodman,	2	Electricity.
	Morgan-Gardner,	3	Electricity.
Irons,	Morgan-Gardner,	2	Electricity.
Marine,	Jeffry,	3	Electricity.
Star,	Morgan-Gardner,	3	Electricity.
Shoenberger,	Morgan-Gardner,	3	Electricity.
Iron City,	Morgan-Gardner,	3	Electricity.

Approximate quantity of coal mined by pick,	2,623,083 tons.
Approximate quantity by machines,	6,485,575 tons.

Total number of machines in use 292, viz: Jeffry, 118; Morgan-Gardner, 97; Ingersoll, 26; Harrison, 24; Sullivan, 14; Link belt, 8; Brown, 2; Goodman, 2; H. S. & I., 1.

TABLE G—Giving name of mine, kind of opening, method of ventilation, size of ventilator, etc., in the First Bituminous District.

Name of Mine.	Kind of Opening.	Method of Ventilation.	Size.	Cubic feet of air at inlet.	Cubic feet of air at outlet.	Number of splits.	Persons in a continuous air current.	Persons in a mixed air current.
Allequippa,	Drift,	Furnace,	28 ft. x 9 ft. x 5 ft.					
Abe Hays,	Drift,	Furnace,						
Apollo,	Drift,	Fan,	18 ft.					
Black Diamond,	Drift,	Fan,	20 ft.	60,000	31,900		49	
Beaumont,	Slope,	Fan,	14 ft.	36,000	25,200	3		
Camden,	Drift,	Furnace,	28½ ft. x 7 ft. x 4 1-3 ft.					
Coal Bluff,	Drift,	Fan,	9 ft. 4 in.	44,250	64,800	2		
Cincinnati,	Drift,	Fan,	16 ft.	48,000	52,000	4		
Catsburg,	Drift,	Fan,	16 ft.	29,320	33,430	2		
Champion,	Drift,	Furnace,						
Clipper,	Drift,	Fan,	12 ft.					
Crescent,	Slope,			30,000	40,000	2		
Eclipse,	Drift,	Fan,	18 ft.	42,180	66,200	6		
Fayette City,	Drift,	Fan,	16 ft.	44,100	47,300	2		
Fox,	Drift,	Furnace,						
Gallatin,	Drift,	Fan,	20 ft.	35,700	40,000	2		
Hilldale,	Drift,	Furnace,	32 ft. x 6½ ft. x 8 ft.	21,610	18,040		91	
Ivill,	Drift,	Fan,	25 ft.	35,000	41,750		149	
Knob,	Slope,	Fan,	19 ft.					
Little Redstone,	Drift,	Fan,	20 ft.					
Mongah,	Drift,	Fan,	20 ft.	39,000	40,000	3		
Milesville,	Drift,	Fan,	20 ft.	52,500	42,000	2		
New Eagle,	Drift,	Furnace,						
Old Eagle,	Drift,	Fan,	20 ft.					
Pine Run,	Drift,	Fan,	6 ft.					
Rock Run,	Drift,	Furnace,	30 ft. x 8 ft. x 5 ft.					
Risher,	Drift,	Furnace,	28 ft. x 7 ft. x 3 ft. x 10 ft.	13,820	54,800	3		
Rostraver,	Drift,	Furnace,	6 ft. x 4 ft. x 4 ft.	25,890	35,200	2		
Riverville,	Drift,	Furnace,						
Tremont,	Drift,	Fan,	16 ft.	25,350	63,000	2		
Vigilant,	Slope,	Fan,	25 ft.	51,200	84,000		65	
Walton, Lower,	Drift,	Furnace,						
Walton, Upper,	Drift,		36 ft. x 10 ft. x 10 ft.					
Arnold No. 1,	Drift,	Fan,	25 ft.	60,000	80,000	3		

Arnold No. 2,	Shaft,	Fan,	18 ft.	52,400	70,000	4		
Anderson,	Drift,	Fan,	12 ft.					
Banner,	Drift,	Furnace,	6 ft. x 7 ft. x 6 ft.	17,040	34,400	3		
Buffalo,	Drift,	Fan,	16 ft.					
Cleveland,	Drift,	Fan,	18 ft.	50,940	63,000	4		
Courtney,	Slope,	Furnace,	22 ft. x 6½ ft. x 5 ft.	29,560	24,000		47	
Cliff,	Drift,	Furnace,						
Equitable,	Drift,	Fan,	16 ft.	35,000	42,000	2		
Eclipse, Railroad,	Drift,	Fan,	6 ft.	39,800	70,000	4		
Fidelity,	Drift,	Furnace,		20,640	15,480		32	
Germania,	Drift,	Fan,	12 ft.	15,200	36,000	2		
Gastonville No. 1,	Drift,	Furnace,						
Gastonville No. 2,	Drift,	Furnace,						
Hackett,								
Little Squaw,	Drift,	Fan,	16 ft.	53,290	56,000	2		
Manown,	Drift,	Fan,	20 ft.	21,500	29,400	2		
North Webster,	Drift,	Furnace,	18 ft. x 8 ft. x 5 ft.	48,000	40,000	3		
Nottingham,	Drift,	Fan,	15 ft.	55,000	67,000	5		
Somers No. 2,	Drift,	Fan,	18 ft.	59,000	53,900	5		
Somers No. 3,	Slope,	Furnace,	18 ft. x 5 ft. x 3 ft.	10,800	20,640		68	
Somers No. 5,	Drift,	Fan,	6 ft.				8	
Acme,	Drift,	Furnace,	25 ft. x 7 ft. x 7 ft.	25,680	29,500	2		
Bunola,	Drift,	Fan,	16 ft.	50,000	56,000		89	
Budd,	Drift,	Fan,	20 ft.	40,000	48,000		30	
Bertha,	Drift,	Fan,	12 ft.	24,200	35,000		72	
Blanche,	Drift,	Fan,	12 ft.	6,800	8,500		48	
Coal Centre,	Drift,	Fan,	16 ft.	22,500	30,000	2		
Clinton,	Drift,	Fan,	12 ft.	39,800	48,000			96
Charlerol No. 1,	Drift,	Fan,	20 ft.	64,840	84,000	2		
Clyde,	Drift,	Fan,	16 ft.	8,550	9,500		59	
Ella,	Drift,	Fan,	20 ft.	52,000	70,000	3		
Ellsworth No. 1,	Shaft,	Fan,	13 ft 6 in.	62,400	67,200	3		
Ellsworth No. 2,	Shaft,	Fan,	13 ft 6 in.	84,000	65,000	3		
Ellsworth No. 3,	Shaft,	Fan,	15 ft.	84,000	67,200	2		
Ellsworth No. 4,	Shaft,	Fan,	15 ft.					
Hazel Kirk,	Shaft,	Fan,	20 ft.	52,200	42,000	3		
Irons,	Drift,	Furnace,	24 ft. x 7 ft. x 5 ft.	27,520	28,200		28	
Iron City,	Drift,	Furnace,	31 ft. x 7 ft. x 5 ft.	7,140	12,000		5	
Marine,	Drift,	Fan,	20 ft.	28,000	30,000		92	
Peters Creek,	Drift,	Furnace,	18 ft. x 5 ft. x 4 ft.	4,950	20,000			71
Shoenberger,	Drift,	Fan,	16 ft.	66,000	90,000	3		
Star,	Drift,	Fan,	16 ft.	50,000	54,000	3		
Vesta No. 1,	Drift,	Fan,	16 ft.	58,200	73,600	3		
Vesta No. 2,	Drift,	Fan,	25 ft.	70,000	67,000	3		
Vesta No. 3,	Drift,	Fan,	12 ft. 4 in.	29,400	37,000	*2		70

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*Mixed.

Ventilation —Continued.

Name of Mine.	Kind of Opening.	Method of ventilation.	Cubic Feet of Air in Each Split as Measured at or Near Face of Headings. First.	Second.	Third.	Fourth.	Fifth.	Number of Persons in Each Split. First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Measurements Taken of Continuous Air Current.	Quantity of air furnished to each person by the ventilators.
Allequippa,	Drift,	Furnace,													
Abe Hays,	Drift,	Furnace,													
Apollo,	Drift	Fan,													
Black Diamond,	Drift	Fan,												9,200-11,500-4,950-22,000-6,600-10,120	1,224
Beaumont,	Slope,	Furnace,	5,960	5,500	8,400			60	25	2					413
Camden,	Drift,	Furnace,													
Coal Bluff,	Drift	Fan,	13,950	14,580				85	45						340
Cincinnati,	Drift	Fan,		11,400		15,000			66		65				366
Catsburg,	Drift	Fan,	13,800	8,400				80	65						202
Champion,	Drift,	Furnace,													
Clipper,	Drift	Fan,													
Crescent,	Slope,		10,880	14,720				60	58						254
Eclipse,	Drift	Fan,					7,650	14	18	20	34	21	20		332
Fayette City,	Drift	Fan,	14,490	16,500				53	62						383
Fox,	Drift,	Furnace,													
Gallatin,	Drift	Fan,	9,180	12,500				67	68						264
Hilldale,	Drift,	Furnace,												12,000-8,550	237
Ivill,	Drift	Fan,												4,860-12,340-10,260-4,400-9,180	234
Knob,	Slope,	Fan,													
Little Redstone,	Drift	Fan,													
Mongah,	Drift	Fan,	11,000	20,000	14,910			56	62	70					207
Milesville,	Drift	Fan,	20,400	10,500				70	40						477
New Eagle,	Drift	Furnace,													
Old Eagle,	Drift	Fan,													
Pine Run,	Drift	Fan,													
Rock Run,	Drift,	Furnace,													
Risher,	Drift,	Furnace,	10,120	5,850	6,220			59	47	57					84
Rostraver,	Drift,	Furnace,	6,310	5,720				62	19						319
Riverville,	Drift,	Furnace,													
Tremont,	Drift	Fan,	1,330					80	70						169
Vigilant,	Slope,	Fan,												11,970-1,560	787
Walton, Lower,	Drift,	Furnace,													
Walton, Upper,	Drift,														
Arnold No. 1,	Drift	Fan,	10,500	14,490	9,600			5	46	22					821

Arnold No. 2,	Shaft,	Fan,	5,200	15,600	11,400	11,900	....	13	14	21	29	....	....	....	680
Anderson,	Drift	Fan,	....	....	....	....	....	....	....	....	....	....	....	....	....
Banner,	Drift,	Furnace,	7,140	....	12,180	....	....	35	20	10	....	....	....	....	227
Buffalo,	Drift	Fan,	....	....	....	....	....	....	....	....	....	....	....	....	....
Cleveland,	Drift	Fan,	2,800	8,840	17,160	15,640	....	8	26	40	59	....	....	....	383
Courtney,	Slope,	Furnace,	....	....	....	....	....	....	....	....	....	....	....	4,950-5,280-6,000	628
Cliff,	Drift,	Furnace,	....	....	....	....	....	....	....	....	....	....	....	....	....
Equitable,	Drift	Fan,	17,820	13,500	....	....	....	15	74	....	....	....	....	....	393
Eclipse, Railroad,	Drift	Fan,	11,710	11,340	5,830	23,220	....	32	22	55	15	....	....	....	....
Fidelity,	Drift,	Furnace,	....	....	....	....	....	....	....	....	....	....	....	2,600-1,980	645
Germania,	Drift	Fan,	13,200	14,840	....	....	....	55	27	....	....	....	....	....	185
Gastonville No. 1,	Drift,	Furnace,	....	....	....	....	....	....	....	....	....	....	....	....	....
Gastonville No. 2,	Drift,	Furnace,	....	....	....	....	....	....	....	....	....	....	....	....	....
Hackett,	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Little Squaw,	Drift	Fan,	18,480	16 500	....	....	....	19	81	....	....	....	....	....	532
Manown,	Drift	Fan,	5,280	12,560	....	....	....	36	20	....	....	....	....	....	383
North Webster,	Drift,	Furnace,	12,420	8,160	6,500	....	....	22	35	13	....	....	....	....	185
Nottingham,	Drift	Fan,	4,500	6,800	4,800	7,200	12,150	8	6	20	6	16	....	....	982
Somers No. 2,	Drift	Fan,	25,200	5,250	4,860	16,200	11,500	45	30	25	20	....	....	....	491
Somers No. 3,	Slope,	Furnace,	....	....	....	....	....	....	....	....	....	....	....	2,500-9,660-13,500-9,010	158
Somers No. 5,	Drift	Fan,	....	....	....	....	....	....	....	....	....	....	....	....	....
Acme,	Drift,	Furnace,	11,200	10,200	....	....	....	47	28	....	....	....	....	....	342
Bunola,	Drift	Fan,	....	....	....	....	....	....	....	....	....	....	....	13,500	561
Budd,	Drift	Fan,	....	....	....	....	....	....	....	....	....	....	....	9,500-9,000	1,333
Bertha,	Drift	Fan,	....	....	....	....	....	....	....	....	....	....	....	4,730	336
Blanche,	Drift	Fan,	....	....	....	....	....	....	....	....	....	....	....	....	141
Coal Centre,	Drift	Fan,	9,520	3,000	....	....	....	64	10	....	....	....	....	....	304
Clinton,	Drift	Fan,	7,500	17,200	11,500	....	....	....	....	....	....	....	....	....	414
Charleroi No. 1,	Drift	Fan,	7,650	14,400	....	....	....	39	76	....	....	....	....	....	563
Clyde,	Drift	Fan,	....	....	....	....	....	....	....	....	....	....	....	9,500-9,000	144
Ella,	Drift	Fan,	13,000	5,600	9 000	....	....	56	29	15	....	....	....	....	520
Ellsworth No. 1,	Shaft,	Fan,	27,090	23,220	21,500	....	....	15	40	40	....	....	....	....	656
Ellsworth No. 2,	Shaft,	Fan,	21,500	15,600	36,000	....	....	13	18	18	....	....	....	....	1,714
Ellsworth No. 3,	Shaft,	Fan,	16,800	21,500	....	....	....	43	60	....	....	....	....	....	815
Ellsworth No. 4,	Shaft,	Fan,	....	....	....	....	....	....	....	....	....	....	....	....	....
Hazel Kirk,	Shaft,	Fan,	20,400	4,000	8,550	....	....	60	17	5	....	....	....	....	636
Irons,	Drift,	Furnace,	....	....	....	....	....	....	....	....	....	....	....	4,500-8,250-5,160	982
Iron City,	Drift,	Furnace,	....	....	....	....	....	....	....	....	....	....	....	1,150	1,428
Marine,	Drift	Fan,	....	....	....	....	....	....	....	....	....	....	....	10,710-16,640-26,090	304
Peters Creek,	Drift,	Furnace,	7,650	8,700	12,500	....	....	....	....	....	....	....	....	....	69
Shoenberger,	Drift	Fan,	17,000	19,200	16,200	....	....	87	72	6	....	....	....	....	400
Star,	Drift	Fan,	20,000	5,400	6,000	....	....	61	27	7	....	....	....	....	526
Vesta No. 1,	Drift	Fan,	18,810	10,640	12,000	....	....	71	84	54	....	....	....	....	278
Vesta No. 2,	Drift,	Fan,	14,720	11,050	3,000	....	....	63	48	10	....	....	....	....	578
Vesta No. 3,	Drift,	Fan,	8,660	11,700	11,400	Mixed	....	68	70	70	....	....	....	....	141

Descriptions of Fatal Accidents.

On February 8, Michael Tomship, a miner, was killed instantly in Catsburg mine by a fall of slate. The slate had been sounded a short time previous to its falling and at that time was considered safe.

Joseph Laveskie, a miner, while at work, March 16, in Cincinnati mine was instantly killed by a fall of slate. The deceased had fired a tight shot which failed to throw the coal, he then commenced to shear it, while at this work some coal fell, together with slate, the latter striking Laveskie, resulting as above.

On March 22, John Ozzella, a miner, was instantly killed in Gallatin mine by a fall of slate. The deceased was, at the time of the accident, loading a car of coal. Subsequent examination of the place showed that the deceased had been working in a breakthrough, the slate fell out of the middle of the road, being "V" shaped. Ozzella had drilled a hole in it for the purpose of putting in a blast but before he could do so it fell.

Stunny Stesher, a miner, was killed instantly March 25, in Ellsworth No. 2, by being caught by an ascending cage; the deceased gave the signal to hoist, and on being answered he got on the cage, but a conversation between his partner, Leon Kowavis, and the former caused Stesher to make an attempt to get off the cage, but in doing so the cage caught him as stated.

John Kornopshe, a miner, employed at the Eclipse River mine was instantly killed by a fall of slate while loading a car of coal. This accident occurred April 12.

Elias Coulson, a miner, was fatally injured in an entry of Vesta No. 1 mine, April 16, by a fall of slate; the deceased and Francis Resolet worked together, they had a large amount of slate on and so as to get some of it down they put a shot in the centre of it, but it failed to do the work, so another hole was put in, but nearer the face of the entry, while tamping the latter, the part which had been previously shot fell, resulting as above.

On April 19, August Stilling, a miner, was fatally injured by a fall of slate in Charleroi mine while removing coal from under it. A short time previous to its falling the deceased made an attempt to get it down, by the use of a wedge.

Alexander Lees, a miner, was fatally injured in Walton Upper mine, April 25, by a fall of slate. The deceased worked in a rib, and while knocking out a post from under some slate it fell on him.

At Acme mine, April 26, John Powko, a miner, was instantly killed by a fall of upper slate. The deceased, Michael Minenock and Paul Moleskey worked together in an entry pillar. At the time of the accident Minenock was shearing at the face, Powko standing close by him for the purpose they, Minenock and Moleskey, say to give warning if anything should move, and while thus employed, a piece of the upper slate gave way without any chance to these persons to notify each other. The place where this fatality occurred was near the crop line, the roof members were much disturbed and as a consequence required careful attention, but while these persons realized this to some extent they were somewhat negligent, as the posts that were used were entirely too far apart and carelessly adjusted. I am informed that a post was set under the slate that fell, but it was not set properly.

John Chillko, a miner, was killed instantly in Charleroi mine, May 8, by a fall of slate. It seems from the appearance of the room that the deceased was knocking coal at the time of the accident. The slate fell out near road head, it was cut off on the left by a slip, and ran out on the right leaving no support except that of resting on the face of the coal. I am informed that the deceased was somewhat careless and headstrong at his work, and had been repeatedly warned relative to the dangers incident to the mining of coal.

Andrew Kalman, a miner, while at work with his father, in Acme mine, May 9, was instantly killed by a fall of slate. The deceased was shoveling coal back at the time of the accident. The slate was cut off by slips on either side and at the face, they tried to get it down a short time previous to its falling.

At Coal Bluff mine, May 11, James Gallagher, a miner, was so seriously injured by being caught by a car that death resulted in about six hours afterwards. A driver, John Brown, was hauling a loaded car on an entry known as No. 10, and while near room 15, the deceased jumped on the front end of car; on reaching the entry parting he fell off and the car ran on him resulting as above stated.

Michael Halodrick, a miner, was killed instantly in Catsburg mine, May 13, by a fall of slate while knocking coal from under it. Some time previous to the slate falling the fire boss of the mine told the deceased and his partner, Andrew Rodjeskie, to make the slate secure when they moved some coal out of the way, but it seems that they did not do anything with it.

James Blakely, a miner, while at work in the Courtney mine, May 21, was instantly killed by a fall of slate while loading a car of coal. His partner, Albert Barton, informed me that the deceased sounded the slate a few minutes before it fell and pronounced it safe. On examination of the place I found that the slate fell out in the shape of a "pot."

Joseph Zuhas, a miner, while at work in his room at the Gallatin mine, May 27, was so severely injured by a piece of slate sliding down on him, after falling on some loose coal, that he died from the effect.

John Reposkie, a miner, was fatally injured, June 9, by being caught between car and entry pillar. The deceased was riding on the hitching of the first and second car of a trip and it is supposed that his body reached too far past the side of the car, and as a consequence he was drawn in between the car and pillar as stated. This accident occurred in the Ivill mine.

Frank Fisher, a miner, was killed instantly in Cincinnati mine, June 12, by being run over by an empty dilly trip while on his way out of the mine.

In Milesville mine, Jeremiah Cavanaugh, a miner, was killed instantly by a fall of slate, June 21. The deceased was shoveling coal from under the slate when it fell on him. The fire boss of the mine marked the slate as dangerous; a miner who worked next room to the deceased called his attention to the unsafe condition of the slate, but he said he would take it down after he loaded a car.

George Jacobs, a miner, was instantly killed in Irons mine, June 24, by a premature blast. The deceased had fired a shot in the slate near the left side of entry and loaded one car out of it, subsequently he tried a shot on the right side, and as far as can be learned he thought that the squib had missed fire, but on reaching the face of entry the shot ignited throwing Jacobs against the entry pillar resulting as above.

On July 2, John Corey, a miner, was killed instantly in Mongah mine by a fall of slate while in the attempt to take it down.

Michael Holavas, a miner, was instantly killed in Acme mine, July 5, by a fall of horseback. The deceased and a brother were at work bringing back a skip, at the time of the accident the former was getting "tamping" to use in a hole which they intended to fire in a small butt. Running nearing parallel with a forty-five degree angle a horseback made its appearance next to corner of skip, on examination I found that the horseback was entirely cut off by slips, which, as a consequence, made it extremely dangerous.

Petro Bushelli, a miner, was fatally injured in the Tremont mine, July 16, by a fall of slate while bearing in.

John Christo, a day hand, employed at the Little Redstone mine was instantly killed, July 17, by a fall of rock. The deceased and a number of others were taking down roof on a double parting for the purpose of raising the tracks on same, while at this work a piece of rock in the shape of an inverted V crossed the double parting at an angle of about forty-five degrees, the lower part being about forty-five and one-half inches wide, the upper on an average about twelve inches, part of the rock had previously fallen, leaving some six feet, in length, up next to the entry pillar. Immediately preceding the accident, Andrew Sabo, one of the workmen told the deceased that "the rock was loose and for him to watch himself," the latter sounded the rock, and then, for some unknown reason, went under it.

William Paling, a miner, while at work in the Eclipse River mine, was killed instantly, August 1, by a fall of slate while loading a car, the deceased had worked in a break through between two entries, some eleven feet of slate had been up of which two was on the entry, two posts had been set under the slate, one on the entry and the other in the breakthrough, the latter was dislodged by the falling slate, a slip appears in the slate near left pillar and running nearly parallel with the same, this slip caused the slate to fall and dislodge the post which was the immediate cause of the accident.

Louis Jones, a miner, was fatally injured in Catsburg mine, August 1, by a fall of slate. The deceased and his father worked together, and at the time of the accident they were loading a car of coal, the former to the left of the road head and the latter to the right, when the slate fell it nearly caught the father.

August Kentola, a miner, was fatally injured in Vesta No. 1, August 2. The deceased was, at the time of the accident, knocking coal of the side of a rib and under the edge of a large body of slate part of which fell on Kentola, resulting as above.

Metsey Knezie, a miner, was instantly killed at Eclipse Railroad mine, August 8, by a fall of slate. The deceased was squaring a room rib, he had one post under the slate between road side and rib, but the slate was nearly cut off by slips which made it extremely dangerous to work under; from appearance of the slate after the accident, it seems that it could be seen that it required more than ordinary attention.

On August 17, John Johnson, a miner, employed at the Tremont mine, was instantly killed by a fall of slate while loading a car.

John McMann, a driver, was fatally injured in Marine mine, August 19, by being kicked by a mule, the deceased was driving a "new mule" and while in a room, with one car attached, it stopped, and McMann used a whip on it, this was immediately followed by a kick, resulting as stated.

William Smith, checkweighman, at the Banner mine, was fatally injured, August 31, by being struck by a partition, made of boards, which had been previously struck by a runaway car which had got beyond the control of the checkman. On the morning of the accident I was standing in the checkhouse while the checkman was letting a car down the incline toward the tipple; on reaching a point midway betwen tipple and checkhouse some one on the latter called to stop the car; on trying to do this the checkman found that he could not, on account of the brake on the drum failing to work, the car dashed into the tipple doing but very little damage. I called the attention of the checkman to the dangers incident to not having the car under perfect control while on the incline, and that the matter must be adjusted; by this time the mine foreman made his appearance and I repeated the injunction to him; operations at the mine was then suspended and work commenced on the drum brake, afterwards a car was checked down the incline without difficulty, but on trying another one it stopped owing to the brake not working properly; the mine foreman then used a small bar on the brake which relieved it sufficiently to allow the car to move on the incline but it rendered the checkman powerless to prevent the car from running away, the brake failing to respond to the pressure of the lever consequently the car came in contact with the partition above mentioned with terrible violence.

James Parker, a miner, was instantly killed by a fall of shale, September 1, in Arnold No. 1 mine. The deceased was working in a room taking off a "skip;" at the time of the accident he was under the roof shale for quite a distance without protection from the shale, except that of resting on the rib side. On examination of the place I found that the shale had broken off very abrutly parallel to the rib side and at right angles to the same.

Petro Brovoskie, a miner, was instantly killed, September 13, by being struck by an ascending cage and falling down shaft at the Hazel Kirk mine. The deceased had entered the mine by way of the stairway for the purpose of employment, to leave the mine he got on the cage with Henry Naylor, the mine foreman and John Cosack, a miner, when about thirty-five feet from bottom of shaft he was seen to move to and fro, when suddenly he pitched forward, and before either Naylor or Cosack could catch him he fell between cage and timbers of shaft, and from this point to the bottom of the shaft. From the action of Brovoskie while on the cage it is supposed that he was overcome by some natural trouble which caused him to reel in the manner stated.

Stanko Gondith, a miner, employed at the Hazel Kirk mine, October 1 ,was instantly killed by a fall of slate while, it is supposed, squaring up the entry pillar of the entry in which he worked.

Stephen Kerrecks, a miner, was fatally injured in Germania mine, October 11, by a fall of slate which on striking him caused another piece to penetrate his leg in such a manner as to cause death in two hours after being injured.

William Booth, a miner, employed at the Equitable mine was fatally injured, October 23, by a fall of slate. The deceased was knocking coal at the time the slate fell. Subsequent examination of the place showed that the slate had been up near roadhead, a slip ran nearly at right angles to the face of room, another was visible, wedged shaped, and running parallel to the face, a post was under the slate yet standing, but it had afforded no protection to the slate that fell afterwards.

George Anchok, a miner, was fatally injured by a fall of slate while loading a car. Anchok and a cousin worked together in a rib, the latter informed me that they tried to get the slate down, but finding it hard they started to work under it again with the above result. On examining the place where the accident occurred I found that a fall of roof had taken place which practically removed all evidence of the same.

Andrew Goreck, a miner, was instantly killed in Ella mine, October 29, by a fall of slate while loading a car, the slate was much troubled with slips and as a consequence required careful attention.

Arthur Dehoss, a miner, was fatally injured in Mongah mine, October 30, by a fall of slate. It is not definitely known what the deceased was doing at the time of the accident, but it is supposed that he was throwing small lumps of coal which they, father and a younger brother who worked with deceased had loaded. The father informed me that after the car was loaded they tried to get the slate down, he then left the face of room, telling the deceased at the same time not to go near the slate, it afterwards fell, resulting as stated. On examination of the place I found a slip running parallel with the face of room, the angle of fracture against safety, except about the middle of it, where it extended over the face of the coal some nineteen inches to a point. The coroner's jury returned a verdict of accidental death.

Henry Fields, a machine helper, was fatally injured in Tremont mine, November 18, by a fall of slate. At the time of the accident the deceased and his partner, William Lutes, were on their seventh "run." On examining the place I found that the slate, which measured ten feet long two feet wide and about ten inches thick, had fallen, part of which struck the deceased; the slate was part of a former "cut" no doubt that it was made unsafe by the undermining which exposed a break slip causing it to break off from face to room.

Frank Baroskie, a driver, was instantly killed in Ellsworth No. 3, mine by a fall of sandstone. The deceased was working at night, and while waiting for the night men to load a car he fell asleep against the entry pillar, while in this condition a piece of sandstone in the shape of a slab fell on him resulting as stated. This accident occurred December 4.

On December 20, Andrew Sarney, a loader, employed at the Beaumont mine, was instantly killed by a fall of slate. The deceased and his father worked together, and at the time of the accident the latter was wedging at a piece of slate to get it down, during this time the former was standing near the roadhead and immediately behind the latter, while here another part of slate fell with the above result.

Mines on the Monongahela and Washington Branch of the Pennsylvania Railroad.

Ellsworth Nos. 3 and 4.—Are new openings of James W. Ellsworth & Co. They are situated near the head waters of Pigeon Creek, in West Bethlehem township, Washington county, about one and one-half miles below Hillsborough, usually known as Scenery Hill. This point forms the present terminus of the railroad. The coal is cut by two shafts, 397 and 417 feet in depth respectively. They are about six hundred feet apart and were sunk simultaneously. Work was started on them in the spring of 1900, and from that time it has gone on continuously. No. 3 mine began shipping coal first in June, 1901, and No. 4 in November. They produced, jointly until the end of the year about 30,000 tons of screened coal, the underground development being yet small. These shafts are situated in the synclinal axis betwen the Pin Hook and Waynesburg anticlinals about twelve miles back from the outcrop of the seam on the Monongahela river. From the very nature of their location it will be observed that they are the pioneer mines with deep shafts in this region, opening and developing the vein where it lies under more than four hundred feet of cover. "The coal as far as developed has shown itself free from sulphur and foreign deleterious substances." While the floor of the seam, on account of its proximity to the basin line, is, as is usual in such cases, rolling and uneven, being more or less crimpled, the quality of the coal is not affected thereby and not a single "clay vein" or "slack vein" has yet been discovered in the workings. The proposed development of this tract of coal is drawn on very simple lines; the main quartering face entries are driven to the north and south in sets of three entries from each shaft to serve as air and haulage ways. From these mains, butt entries will be turned to the east and west. The strike of the seam at this point is almost due east and west, while it dips southward; for this reason the south mains are descending, but only a little development work will be done with these entries. The butt entries to the east, although going down grade, will soon reach the basin line and will then rise along the west side of the Waynesburg anticlinal axis. The permanent plan for conducting the ventilating current has not been fully decided upon. The ventilation at both places at present is furnished by means of fourteen feet diameter Capell fans which are reversible and which up, to the present time, have been run as exhaust fans, but can be reversed in a short time and used as blowers. The shafts are in three compartments, two hoistways, used also at present as downcast airways, and one air compartment for upcast to fan. For hoisting there are at each shaft, large first motion engines, 24"x48" cylinders, with cone drums eight to ten feet in diameter, using one and one-half inch wire rope. Because of the gaseous nature of the coal seam, compressed air is used to operate mining machines and pumps. The air is compressed for both mines at No. 4 mine with one "Norwalk" compressor 26″x30″. This compressor has furnished power for four chain machines, four punching machines and four inside drainage pumps. The pumps for the discharge from the mine are run by steam. The pump at No. 3—10″x5″x14″ stroke—discharges about 115 gallons of water per minute.

This pump will be used only temporarily and will be replaced by a larger one as necessity demands. The pump at No. 4 mine, 16″x10¼″-x10′ discharged about 171 gallons per minute, being only for temporary needs, and is to be subsequently replaced by larger ones. The outside arrangements of the two plants are very much on the same lines. The intention of furnishing compressed air for both mines from No. 4, made it necessary for a larger boiler plant and engine room there, than at No. 3, as most of the mechanical work will also be done at the same place, the machine shop is built at No. 4, though there is a smaller shop at No. 3. All the outside buildings are of brick with slate roofs. The tipples are of steel and fitted with Ramsey car pushers and transfers, double automatic dumping arrangements, and screens for all grades of coal. At No. 3 there is a battery of four "Erie" tubular 125 H. P. boilers, and at No. 4 a battery of six of the same make. Some trouble was experienced with the hardness and consequent foaming of the water in the boilers, due to carbonates of lime in solution, but this has been overcome by means of water-heaters run by the exhaust steam from fans and compressor. A reservoir of 5,500,000 gallons capacity has been built during the past year so as to have an adequate water supply during the dry season. For the accommodation of the workmen, houses have been built for fifty-six families. With the exception of a block of twelve houses that are in one long row, all are substantial frame double dwellings with at least thirty feet space between them. Care has been taken in the choice of their location to have good drainage; and deep drilled wells have been sunk to insure a pure and healthful supply of water, as well as a constant and never failing supply for all domestic purposes.

Hazel Kirk.—General condition of ventilation satisfactory. Drainage requires improvement in parts of the mine.

Ellsworth No. 1.—On examination I found this mine in much improved condition from that of a former visit as regards ventilation and drainage.

Ellsworth No. 2.—General condition of ventilation satisfactory. Drainage requires improvement in parts of the mine.

Mines Located on the Pittsburg and Wheeling Division of the Baltimore and Ohio Railroad.

Anderson, Hackett, Gastonville Nos. 1 and 2.—Idle during the entire year.

Bertha.—Is a new drift opening. It consists of five face headings and an equal number of butts. At the time of my visit there were employed inside, eight machine men, fifty-five loaders, four miners, four drivers and four other persons. The ventilation is produced by a twelve foot ventilating fan, which was producing, at the inlets 24,200 cubic feet of air per minute. Owing to neglect in not keeping the stoppings in proper condition, very little reached the working faces, and to make matters worse, rooms were opened in advance of the air current; these I directed to be vacated and the air current distributed in a legal manner.

Blanche.—Is a new drift opening. On a visit to this mine I found the ventilation and drainage in parts of the mine unsatisfactory.

Eclipse.—General condition of ventilation, fair. Drainage requires improvement in parts of the mine.

Germania.—On an examination of this mine I found the ventilation in parts very unsatisfactory, the drainage also required attention to reach requirements of law.

Nottingham.—This mine was in operation only thirty-six and one-half days during the year. While operations were suspended, extensive improvements were made in and about the mine consisting of a complete electric mining plant, ventilating fan, endless rope haulage and the relaying of the greater part of the main haulage roads. Overcasts were built, and the air current divided in a more satisfactory manner than ever before. On examination of the mine I found it, in a general way, in such condition that very little could be complained of.

Mines on the Peters Creek Branch of the Pennsylvania Railroad.

Rachel, formely Peters Creek.—General condition of mine, fair.

Peters Creek Nos. 1 and 2, formerly Crescent Nos. 1 and 2. These are new drift openings, but not sufficiently developed for a general description in this report.

Mines on the Monongahela Division of the Pennsylvania Railroad.

Allen.—Abandoned, and the rolling stock and other movable material taken to the Acme mine.

Courtney.—Ventilation, in a general way, fair. Drainage in a very unsatisfactory condition in parts of the mine.

Buffalo and Cliff.—Not in operation during the year.

Star.—General condition of mine, satisfactory.

Fidelity.—Ventilation requires improvement in parts of the mine. General condition of drainage, fair.

Acme.—In operation 289 days during the year. Persons employed, 142. Ventilation fair, but drainage is inadequate in parts of the mine.

Little Squaw.—Taken as a whole the mine was in fair condition as regards ventilation. Parts of this mine was unsatisfactory as to the passage ways leading to the means of egress. I called the attention of the management to the matter and immediate steps were taken to remedy cause of complaint.

Charleroi No. 2.—Is a new drift opening located about three-fourths of a mile north of Charleroi No. 1. Only a few persons are employed at present.

Banner.—In fair condition as regards ventilation, but the drainage could be improved.

Shoenberger.—General condition of ventilation, satisfactory. Water, at times, makes the roads very bad. Electrical mining machines have been introduced during the year, and an electric motor for haulage.

Charleroi No. 1.—General condition of "Old Hill," fair. The "New Hill" requires improvement in ventilation. The traveling way should receive attention so as to comply with the law, this I requested those in charge to do.

Mines on the Pittsburg and Lake Erie Railroad.

Bunola.—Inlet air measurement 50,000. Persons employed, eighty-nine. Ventilation and drainage require improvement in parts of the mine.

Somers No. 3.—Ventilation and drainage, fair.

Arnold No. 2.—General condition of ventilation, satisfactory. Drainage inadequate in parts of the mine.

Irons.—This mine as regards the ventilation and drainage did not, on my last visit, meet the requirements of the law.

Somers No. 4.—Not in operation.

Cleveland or Somers No. 1 and North Webster were in fair condition.

Equitable.—Examination showed that the ventilation and drainage were unsatisfactory. Passage ways to the second means of egress also needed attention, and the necessary suggestions were made.

Manown.—General condition of mine, fair. On the night of February 17, a fire occurred in the power house, of this plant, which totally destroyed it, together with the ventilating fan, housing, blacksmith shop and part of the trestle leading to the tipple. Owing to the proximity of these buildings to the entrances to the mine, I saw the possibility of fire and the consequent danger of shutting off the means of egress at the mine, and suggested that an additional opening be made so as to afford an escape way in case of an emergency, but the persons then operating the mine elected to do nothing in a practical way relative to the matter. On the present company taking charge I appealed to it, which resulted in my suggestions being complied with. Two persons were at work in the mine at the time of the fire, who would, in all probability have lost their lives if this exit had not been provided. In urging another opening it was not claimed by me that the mine openings were not legal, but that they would be useless in case of a fire in the buildings mentioned.

Arnold No. 1.—General condition of ventilation, fair. Drainage require improvement in parts of the mine.

Somers No. 5.—Formely Bellevernon. Persons employed, twelve. The ventilation was unsatisfactory when examined. Since my visit a ventilating fan has been erected which as I am informed, is giving excellent results.

Sheppler.—I cannot say anything in regard to this mine except to call attention to what was stated in the report of 1900.

Somers No. 2.—The ventilation is fair, but drainage required improvement in parts of the mine.

Mines on the Monongahela River.

Milesville, Gallatin, Crescent and Marine, were found in fair condition when inspected.

Old Eagle, New Eagle, Pine Run, Allequippa, Riverville, Champion and Fox.—Idle the entire year.

Abe Hays.—A new tipple will be necessary before any shipping can be done at this point.

Budd.—General condition of mine, satisfactory.

Cincinnati.—In operation 167 days. Persons employed, 193. Condition of mine when examined, fair.

Risher.—Outlet air measurements showed 50,800 cubic feet. Persons employed 163. Divisions of air three. Ventilation could be improved in parts of the mine. Drainage, satisfactory. A ventilating fan has been installed since my visit, which should produce sufficient air for the mine for some time to come.

Ella.—Owing to the extent of the excavations of this mine the air current produced by the fan does not reach the working faces in the manner required by law. To remedy this, a shaft is being sunk near the present active workings.

Mongah.—General condition of mine when examined, fair.

Fayette City.—When inspected the ventilation was fair; drainage required improvement in parts of the mine.

Vesta No. 2.—General condition of mine, fair.

Black Diamond.—When inspected, the mine, in a general way, was in a satisfactory condition.

Iron City.—This mine is located about one mile south of the village of Webster. In the spring of 1883, ice and high water destroyed the tipple, since which time nothing had been done to put the plant in condition to operate until the present company acquired the property. A new tipple has been built, a gravity plane and such other improvements made as were necessary for the transportation of coal from mine to river. The mining will be done by mining machines, the power plant, for this purpose, having been well under way at the time of my visit. The ventilation at present is produced by a furnace, but it is the intention to replace this by a ventilating fan in the near future.

Vigilant, Beaumont and Hilldale.—When inspected, the ventilation and drainage required improvement in parts of these mines. I have been informed that a marked difference for the better has been made since my visits.

Clyde, formerly Sanford.—On examination of this mine I found the ventilation and drainage, in parts, very unsatisfactory. The active workings were without the legal openings, although ninety-one persons were at work inside. The inlet air measurements were only eight thousand five hundred and fifty cubic feet. I gave the company peremtory notice to put the mine in such condition as is required by law, calling special attention to the matter of ventilation and openings. A Capell ventilating fan sixteen feet in diameter has been installed at the mine since my visit, and the necessary openings made.

Vesta No. 1.—This is the largest mine in the district, employing in the day and night shifts, 660 persons inside. From the time this mine was opened, except for a short time while a furnace was used, the ventilation was produced by a fan located at Vesta No. 2, but owing to the large territory excavated and the number of persons employed, it proved inadequate and a Capell fan sixteen feet in diameter was then placed in position at the former mine, which, I am informed, is giving satisfactory results.

Clipper.—Mine not in operation on last visit.

Eclipse.—General condition of drainage, satisfactory. Owing to leakage and the improper distribution of the air current, some of the workings were in a very unsatisfactory condition. Since my examination they have, as I am informed, adjusted matters so as to comply with the law.

Coal Centre.—General condition of ventilation, fair. Drainage requires improvements in parts of the mine.

Clinton.—General condition of mine, satisfactory.

Vesta No. 3.—On examining the mine the inlet air measurement showed 29,400 cubic feet. Persons employed 216, classified as follows, 180 miners, fourteen drivers and twenty-two other persons. While the drainage was satisfactory, the ventilation in parts of the workings was not such as to comply with the law. Subsequent to the inspection a ventilating fan has been installed, which, I am informed, is giving ample air.

Catsburg and Ivill.—The ventilation of these mines was, when inspected, not up to the legal requirements. General condition of drainage, fair.

Tremont.—On my last examination of this mine, the ventilation and drainage were in a very unsatisfactory condition. One hundred and seventy persons were employed inside and the only air measurement obtainable was 600 and 1,320 cubic feet respectively. The ventilating fan was exhausting 57,700 cubic feet of air per minute, but a large volume of this was from the old Tremont part of the workings, and it was practically impossible to prevent this, owing to the condition of the return to the fan. They are opening up, on the right of the main entry, a new route for the air, which, when completed, will remove a great many of the difficulties which confront them at present in regard to the ventilation, although this new passage way passes through old workings for quite a distance, they intend to line it, so as to prevent, as far as possible, any leakage of air. On a former visit I found fire damp on some falls of entry 26 in such quantities as to be dangerous, I requested that the entry and the one running parallel be vacated until the places were made safe. Some time after this, the entry was again vacated on account of gas on the falls, and danger signals were placed to warn persons not to enter the entry, but while these signals were up a miner, Otto Winberg, passed them, and on being informed, I entered suit against him before Squire J. T. Roley, of Belle Vernon who after hearing the evidence remanded the defendant to the borough lockup presumably to hold him for court, but the next morning on reaching the station on the Washington county side, and purchasing tickets for Uniontown the defendant was released, by the officers in charge, on the payment of ten dollars, this amount covered the costs in the case up to this time. I could not see how this matter should be thus dealt with, so I called, a committee of the miners for an explanation from the squire, and he informed us that there was not sufficient evidence to hold Winberg for court. This was a strange decision to say the least, as three persons testified that they saw Winberg beyond the danger signals, but the evidence was of avail before his honor. Not seeing my way clear to let the case end here, I made an information against Winberg before Squire J. A. O'Neil, of Fayette City, submitting the same evidence as before, this resulted in the defendant being held for court, together with John Mackey, who I afterwards found had been with Winberg when he passed the danger signals. In the trial a verdict of guilty was rendered.

Dilworth.—Is a new shaft opening located about one-half mile north of Rices Landing. Description of this plant will be left to a future report as the coal has only been reached.

Rostraver.—Ventilation and drainage requires improvement in parts of the mine.

Camden, Rock Run, Apollo, Walton, Lower and Upper.—These mines ceased operations before I could reach them in my tour of inspections.

Little Redstone.—Not in operation when visited.

Knob.—Did not visit this mine while in operation.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the First Bituminous District for the Year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Monongahela River Consolidated Coal and Coke Co.						
Alliquippa,	Allegheny,	O. A. Blackburn,	Pittsburg,	Thomas Watkins,	Camden,	M. D. of the P. R. R.
Abe Hays,	Washington,	O. A. Blackburn,	Pittsburg,			M. D. of the P. R. R.
Apollo,	Fayette,	O. A. Blackburn,	Pittsburg,	J. T. Jones,	Fayette City	M. D. of the P. R. R.
Black Diamond,	Washington,	O. A. Blackburn,	Pittsburg,	William Seddon,	Monongahela,	M. D. of the P. R. R.
Beaumont,	Washington,	O. A. Blackburn,	Pittsburg,	Richard Hiney,	W. Brownsville,	M. D. of the P. R. R.
Camden,	Allegheny,	O. A. Blackburn,	Pittsburg,	William Griffith,	Camden,	M. D. of the P. R. R.
Coal Bluff,	Washington,	O. A. Blackburn,	Pittsburg,	Thos. A. Watson,	Coal Bluff,	M. D. of the P. R. R.
Cincinnati,	Washington,	O. A. Blackburn,	Pittsburg,	John McMeneny,	Courtney,	M. D. of the P. R. R.
Catsburg,	Washington,	O. A. Blackburn,	Pittsburg,	William Seddon,	Monongahela,	M. D. of the P. R. R.
Champion,	Washington,	O. A. Blackburn,	Pittsburg,	William Minford,	Elco,	M. D. of the P. R. R.
Clipper,	Washington,	O. A. Blackburn,	Pittsburg,	N. G. Fife,	Allenport,	M. D. of the P. R. R.
Crescent,	Washington,	O. A. Blackburn,	Pittsburg,	John A. Powell,	California,	M. D. of the P. R. R.
Eclipse,	Washington,	O. A. Blackburn,	Pittsburg,	William Minford,	Elco,	M. D. of the P. R. R.
Fayette City,	Fayette,	O. A. Blackburn,	Pittsburg,	J. T. Jones,	Fayette City,	P. and L. E. R. R.
Fox,	Washington,	O. A. Blackburn,	Pittsburg,	E. L. Morris,	Fredericktown,	M. D. of the P. R. R.
Gallatin,	Allegheny,	O. A. Blackburn,	Pittsburg,	William Coulson,	Manown,	P. and L. E. R. R.
Hilldale,	Washington,	O. A. Blackburn,	Pittsburg,	D. W. Phillips,	Floreffe,	M. D. of the P. R. R.
Ivill,	Washington,	O. A. Blackburn,	Pittsburg,	William Seddon,	Monongahela,	M. D. of the P. R. R.
Knob,	Washington,	O. A. Blackburn,	Pittsburg,	Richard Hiney,	W. Brownsville,	M. D. of the P. R. R.
Little Redstone,	Fayette,	O. A. Blackburn,	Pittsburg,	J. T. Jones,	Fayette City,	P. and L. E. R. R.
Mongah,	Allegheny,	O. A. Blackburn,	Pittsburg,	J. C. Hornichel,	Monongahela,	P. and L. E. R. R.
Milesville,	Allegheny,	O. A. Blackburn,	Pittsburg,	Harry Seddon,	Sunny Side,	P. and L. E. R. R.
New Eagle,	Washington,	O. A. Blackburn,	Pittsburg,			M. D. of the P. R. R.
Old Eagle,	Allegheny,	O. A. Blackburn,	Pittsburg,	J. C. Hornickel,	Monongahela,	M. D. of the P. R. R.
Pine Run,	Allegheny,	O. A. Blackburn,	Pittsburg,	Thomas Watkins,	Camden,	M. D. of the P. R. R.
Rock Run,	Allegheny,	O. A. Blackburn,	Pittsburg,	Thomas Watkins,	Camden,	M. D. of the P. R. R.
Risher,	Allegheny,	O. A. Blackburn,	Pittsburg,	James Henderson,	Dravosburg,	M. D. of the P. R. R.,
Rostraver,	Westmoreland,	O. A. Blackburn,	Pittsburg,	Fred. Hornickel,	Lock No. 4,	P. and L. E. R. R.
Riverville,	Washington,	O. A. Blackburn,	Pittsburg,	E. L. Mannis,	Fredricktown,	By boat.
Tremont,	Fayette,	O. A. Blackburn,	Pittsburg,	Wm. Billingsley,	Bellevernon,	P. and L. E. R. R.
Vigilant,	Washington,	O. A. Blackburn,	Pittsburg,	John A. Powell,	California,	M. D. of the P. R. R.
Walton, Lower,	Allegheny,	O. A. Blackburn,	Pittshurg,	D. W. Phillips,	Floreffe,	M. D. of the P. R. R.
Walton, Upper,	Allegheny,	O. A. Blackburn,	Pittsburg,	D. W. Phillips,	Epton,	M. D. of the P. R. R.
People's Coal Co.						
Clinton,	Allegheny,			John A. Griffith,	Monongahela,	P. and L. E. R. R.

Crescent Coal Co.						
*Crescent No. 1,	Allegheny,			Harry Kinloch,	Epton,	Peters Creek Branch of P. R. R.
*Crescent No. 2,	Allegheny,			Harry Kinloch,	Epton,	Peters Creek Branch of P. R. R.
Vesta Coal Co.						
Vesta No. 1,	Washington,			R. B. Drum,	California,	M. D. of the P. R. R.
Vesta No. 2,	Washington,			R. B. Drum,	California,	M. D. of the P. R. R.
Vesta No. 3,	Washington,			R. B. Drum,	California,	M. D. of the P. R. R.
Vesta No. 4,	Washington			R. B. Drum,	California,	M. D. of the P. R. R.
James W. Ellsworth & Co.						
Ellsworth No. 1,	Washington,	A. H. Humphreys,	Ellsworth,	Benjamin Holliday,	Ellsworth,	M. & W. B. of P. R. R.
Ellsworth No. 2,	Washington,	A. H. Humphreys,	Ellsworth,	Benjamin Holliday,	Ellsworth,	M. & W. B. of P. R. R.
Ellsworth No. 3,	Washington,	A. H. Humphreys,	Ellsworth,	David Thomas,	Scenery Hill,	M. & W. B. of P. R. R.
Ellsworth No. 4,	Washington,	A. H. Humphreys,	Ellsworth,	David Thomas,	Scenery Hill,	M. & W. B. of P. R. R.
Henderson Coal Co.						
Irons,	Westmoreland,	W. M. Henderson,	Charleroi,	W. M. Henderson,	Charleroi,	M. D. of the P. R. R.
Star Coal Co.						
Star,	Washington,	H. W. Croft,	Pittsburg,	R. B. Robinson,	Monongahela,	M. D. of the P. R. R.
John J. Jones.						
Bertha,	Allegheny,	David Orr,	Braughton,	David Orr,	Braughton,	P. & W. D. of B. & O.
Blanche,	Washington,	David Orr,	Braughton,	David Orr,	Venitia,	P. & W. D. of B. & O.
A. R. Budd.						
Budd,	Westmoreland,	A. G. Leonard,	Webster,	A. G. Leonard,	Webster,	P. and L. E. R. R.
Hazel Kirk Gas Coal Co.						
Hazel Kirk,	Washington,	Lute Hornickel,	Monongahela,	Lute Hornickel,	Monongahela,	M. & W. B. of P. R. R.
Bunola Mining Co.						
Bunola,	Allegheny,	John M. Crawford,	Bunola,			P. and L. E. R. R.
Dilworth Coal Co.						
Dilworth,	Greene,			James Black,	Rice's Landing,	By boat.
Shoenberger Coal Co.						
Shoenberger,	Washington,			James B. Smail,	Monongahela,	M. D. of the P. R. R.
Clyde Coal Co.						
Clyde,	Washington,			Lee M. Crowthers,	Fredricktown,	By boat.
Stockdale Coal Co.						
Acme,	Washington,			C. W. Braznell,	Stockdale,	M. D. of the P. R. R.
Allen Coal Co.						
Allen,	Washington			C. W. Braznell,	Stockdale,	M. D. of the P. R. R.
Charleroi Coal Works.						
Charleroi No. 1,	Washington,			Jesse K. Johnston,	Charleroi,	M. D. of the P. R. R.
Charleroi No. 2,	Washington,			Jesse K. Johnston,	Charleroi,	M. D. of the P. R. R.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
W. H. Flint & Co.						
Iron City,	Westmoreland,			W. H. Flint,	Pittsburg,	P. and L. E. R. R.
Marine Coal Co.						
Marine,	Fayette,			W. S. Gibson,	Fayette City,	P. and L. E. R. R.
Morris Bailey Coal Co.						
Peters Creek,	Allegheny,	W. J. Morris,	Pittsburg,	W. J. Neilson,	Coal Valley,	Peters Creek Branch of P. R. R.
Ella Coal Co.						
Ella,	Westmoreland,	G. A. Magoon,	Pittsburg,	A. E. Speakman,	Sunny Side,	P. and L. E. R. R.
Ella,	Westmoreland,	G. A. Magoon,	Pittsburg,	A. E. Speakman,	Sunny Side,	P. and L. E. R. R.
Pittsburg Coal Co.						
Anderson,	Washington,	G. W. Schluederberg,	Pittsburg,	W. B. McCoy,	Finleyville,	P. & W. D. of B. & O.
Arnold No. 1,	Fayette,	G. W. Schluederberg,	Pittsburg,	John Reese,	Bellevernon,	P. and L. E. R. R.
Arnold No. 2,	Fayette,	G. W. Schluederberg,	Pittsburg,	John Reese,	Bellevernon,	P. and L. E. R. R.
Arnold No. 3,	Fayette,	G. W. Schluederberg,	Pittsburg,	John Reese,	Bellevernon,	P. and L. E. R. R.
Banner,	Washington,	G. W. Schluederberg,	Pittsburg,	H. B. H. Louttit,	Monongahela,	M D. of the P. R. R.
Buffalo,	Washington,	G. W. Schluederberg,	Pittsburg,	H. B. H. Louttit,	Monongahela,	M D. of the P. R. R.
Cliff,	Washington,	G. W. Schluederberg,	Pittsburg,	H. B. H. Louttit,	Monongahela	M D. of the P. R. R.
Cleveland,	Fayette,	G. W. Schluederberg,	Pittsburg,	John Reese,	Bellevernon,	P. and L. E. R. R.
Courtney,	Washington,	G. W. Schluederberg,	Pittsburg,	H. B. H. Louttit,	Monongahela,	M. D. of the P. R. R.
Equitable,	Westmoreland,	G. W. Schluederberg,	Pittsburg,	William Gibson,	Manown,	P. and L. E. R. R.
Eclipse,	Washington,	G. W. Schluederberg,	Pittsburg,	W. B. McCoy,	Finleyville,	M. D. of the P. R. R.
Fidelity,	Washington,	G. W. Schluederberg,	Pittsburg,	H. B. H. Louttit,	Monongahela,	M. D. of the P. R. R.
Germania,	Washington,	G. W. Schluederberg,	Pittsburg,	W. B. McCoy,	Finleyville,	M. D. of the P. R. R.
Gastonville No. 1,	Washington,	G. W. Schluederberg,	Pittsburg,	W. B. McCoy,	Finleyville,	M. D. of the P. R. R.
Gastonville No. 2,	Washington,	G. W. Schluederberg,	Pittsburg,	W. B. McCoy,	Finleyville,	M. D. of the P. R. R.
Hackett,	Washington,	G. W. Schluederberg,	Pittsburg,	W. B. McCoy,	Finleyville,	M. D. of the P. R. R.
Little Squaw,	Washington,	G. W. Schluederberg,	Pittsburg,	H. B. H. Louttit,	Monongahela,	M. D. of the P. R. R.
Manown,	Allegheny,	G. W. Schluederberg,	Pittsburg,	William Gibson,	Manown,	P. and L. E. R. R.
North Webster,	Westmoreland,	G. W. Schluederberg,	Pittsburg,	William Gibson,	Manown,	P. and L. E. R. R.
Nottingham,	Washington,	G. W. Schluederberg,	Pittsburg,	W. B. McCoy,	Finleyville,	P. & W. D. of B. & O.
Somers No. 2,	Westmoreland,	G. W. Schluederberg,	Pittsburg,	John Reese,	Bellevernon,	P. and L. E. R. R.
Somers No. 3,	Westmoreland,	G. W. Schluederberg,	Pittsburg,	John Reese,	Bellevernon,	P. and L. E. R. R.
Somers No. 5,	Westmoreland,	G. W. Schluederberg,	Pittsburg,	John Reese,	Bellevernon,	P. and L. E. R. R.
Snowden,	Allegheny,	G. W. Schluederberg,	Pittsburg,	W. B. McCoy,	Finleyville,	P. and L. E. R. R.
Shepplar,	Westmoreland,	G. W. Schluederberg,	Pittsburg,	John Reese,	Bellevernon,	P. & W. D. of B. & O. P. and L. E. R. R.

*Now Peters Creek.

TABLE II—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the First Bituminous District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
M. R. C. C. and C. Co.												
Apollo,	Fayette,	100,800	660	.....	101,460	87	247	.....	.....	1,800	.....	15
Black Diamond,	Washington,	122,792	456	62	123,310	188	181	.....	4	1,200	.....	14
Beaumont,	Washington,	153,484	1,440	1,532	156,456	216	183	1	2	2,712	.....	14
Camden,	Allegheny,	53,276	281	423	53,980	97	148	.....	1	500	.....	9
Coal Bluff,	Washington,	138,457	528	223	139,208	189	170	1	2	1,500	.....	17
Cincinnati,	Washington,	155,002	2,088	.....	157,090	167	193	2	.....	500	.....	14
Catsburg,	Washington,	252,900	1,020	4,214	258,134	223	244	3	3	1,500	.....	15
Clipper,	Washington,	53,708	171	119	53,998	89	106	.....	.....	290	.....	7
Crescent,	Washington,	150,240	1,446	24	151,710	237	151	.....	3	610	.....	15
Eclipse,	Washington,	234,143	2,537	212	236,892	257	210	2	1	1,500	.....	17
Fayette City,	Fayette,	161,416	3,064	820	165,300	140	232	.....	3	2,000	.....	16
Galatin,	Washington,	152,996	2,860	400	156,256	220	208	2	9	600	.....	18
Hilldale,	Washington,	55,337	214	5	55,556	137	158	.....	3	100	.....	7
Ivill,	Washington,	121,249	1,273	.....	122,522	170	166	1	7	500	.....	14
Knob,	Washington,	126,253	2,317	668	129,238	158	236	.....	4	2,340	.....	16
Little Redstone,	Fayette,	180,855	1,963	494	183,312	209	190	1	2	700	.....	20
Mongah,	Allegheny,	206,462	2,500	.....	208,962	252	225	2	10	600	.....	18
Milesville,	Allegheny,	129,680	1,376	348	131,404	192	163	1	3	800	.....	13
Rock Run,	Allegheny,	54,528	50	408	54,986	98	153	.....	.....	200	.....	9
Risher,	Allegheny,	172,299	1,240	3,534	177,073	212	225	.....	2	75	.....	19
Rostraver,	Westmoreland,	86,472	52	2	86,526	200	102	.....	3	50	.....	7
Tremont,	Fayette,	206,845	7,080	185	214,110	237	234	3	2	1,800	.....	19
Vigilant,	Washington,	118,940	833	4,377	124,150	231	192	.....	.....	2,168	.....	20
Walton,	Allegheny,	91,812	364	244	92,420	107	278	1	3	450	.....	20
Total,	.....	3,279,946	35,813	18,294	3,334,053	180	4,595	20	67	24,495	.....	353

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Pittsburg Coal Co.												
Arnold No. 1,	Fayette,	258,415	3,939	543	262,897	170½	207	1	4	1,635	....	19
Arnold No. 2,	Fayette,	140,430	1,299	214	141,943	172¾	116	......	3	828	....	12
Banner,	Washington,	56,498	1,537	166	58,201	134½	86	1	......	216	....	9
Cleveland,	Fayette,	208,118	3,023	1	211,142	202	198	......	7	1,500	100	17
Courtney,	Washington,	36,850	333	353	37,536	155½	59	1	......	144	....	5
Equitable,	Westmoreland,	96,442	1,493	853	98,788	183¼	140	1	1	530	....	10
Eclipse,	Washington,	149,090	2,497	51	151,638	196	176	1	7	1,339	600	20
Fidelity,	Washington,	24,961	34	110	25,105	118½	37	......	......	72	....	3
Germania,	Washington,	128,277	250	137	128,664	233¾	126	1	1	1,076	....	18
Little Squaw,	Washington,	168,089	699	381	169,169	198	130	......	3	....	....	12
Manown,	Allegheny,	23,279	612	206	24,097	49	93	......	......	25	....	9
North Webster,	Westmoreland,	94,750	2,717	393	97,860	209¾	131	......	1	500	....	10
Nottingham,	Washington,	32,567	713	77	33,357	36½	105	......	2	600	....	23
Somers Nos. 2-4,	Westmoreland,	263,252	2,306	1,020	266,578	209½	266	......	5	1,673	300	15
Somers No. 3,	Westmoreland,	63,504	37	....	63,541	184½	65	......	2	411	500	8
Somers No. 5,	Westmoreland,	1,463	1	49	1,513	52	40	......	......	17	50	2
Snowden,	Allegheny,											
Total,	....	1,745,985	21,490	4,554	1,772,029	157	1,975	6	36	10,566	1,550	192
People's Coal Co.												
Clinton,	Allegheny,	52,099	441	....	52,540	235	134	......	2	....	....	10
Marine Coal Co.												
Marine,	Fayette,	63,460	400	60	63,920	193	175	1	4	500	....	10

Vesta Coal Co.												
Vesta No. 1,	Washington,	645,192	11,742	1,378	658,312	315½	700	2	1	3,000	500	50
Vesta No. 2,	Washington,	238,113	3,999	1,676	243,788	241	175	......	2	800	....	20
Vesta No. 3,	Washington,	378,642	2,049	....	380,691	261	228	......	2	1,600	....	16
Vesta No. 4,	Washington,	....	....	....	....	....	....	......	......	....	....	....
Total,	....	1,261,947	17,790	3,054	1,282,791	272½	1,103	2	5	5,400	5 0	86
C. Jutte & Co.												
Coal Centre,	Washington,	95,033	760	289	96,082	216½	158	......	1	....	....	11
James W. Ellsworth & Co.												
Ellsworth No. 1,	Washington,	51,910	4,255	108	56,273	232	145	......	......	....	8,133	6
Ellsworth No. 2,	Washington,	40,476	2,411	516	43,403	282	91	1	1	....	6,433	4
Ellsworth No. 3,	Washington,	27,232	2,802	156	30,190	126	53	1	......	....	4,959	3
Ellsworth No. 4,	Washington,	....	....	....	....	33	35	......	......	....	2,675	2
Total,	....	119,618	9,468	780	129,866	168	324	2	1	....	22,200	15
Henderson Coal Co.												
Irons,	Westmoreland,	65,240	....	....	65,240	261	62	1	......	....	....	....
Star Coal Co.												
Star,	Washington,	39,912	1,500	457	41,869	133	115	......	2	29	....	7
John H. Jones.												
Bertha,	Allegheny,	54,239	700	100	55,039	147¼	96	1	1	....	....	....
Blanche,	Washington,	42,664	700	100	43,464	201¼	67	......	......	....	....	....
Total,	....	96,903	1,400	200	98,503	174¼	163	1	1	....	....	....
A. R. Budd.												
Budd,	Westmoreland,	47,000	250	....	47,250	235	119	......	......	....	....	....
B. Braznell & Son.												
Allen,	Washington,	24,459	....	650	25,109	151	38	......	......	....	....	....
Charleroi Coal Works.												
Charleroi No. 1,	Washington,	205,500	2,520	....	208,020	242	206	2	......	412	200	16
Charleroi No. 2,	Washington,	2,083	....	....	2,083	....	7	......	......	....	....	....
Total,	....	207,583	2,520	....	210,103	242	213	2	......	412	200	16
W. H. Flint & Co.												
Iron City,	Westmoreland,	....	....	....	....	....	....	......	1	....	....	....
Morris-Bailey Coal Co.												
Peters Creek,	Allegheny,	47,901	....	....	47,901	229	91	......	1	....	....	....
Ella Coal Co.												
Ella,	Allegheny,	182,190	3,517	1,326	187,033	262	233	1	8	....	....	21

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Hazel Kirk Gas Coal Co. Hazel Kirk, ...	Washington, ...	72,827	2,190	280	75,302	222	167	2	4	282	4,590	8
Bunola Mining Co. Bunola, ...	Allegheny, ...	116,505	1,911	664	119,080	235	121	......	......	....	....	12
Shoenberger Coal Co. Shoenberger, ...	Washington, ...	183,555	600	300	184,455	280	218	......	5	1,000	200	18
Clyde Coal Co. Clyde, ...	Washington, ...	65,918	500	....	66,418	223½	74	......	1	....	....	6
Stockdale Coal Co. Acme, ...	Washington, ...	207,414	700	1,000	209,114	242	118	3	3	1,200	....	10
Grand total, ...	....	7,975,495	101,250	31,913	8,108,658	*215½	10,195	41	142	43,884	29,240	775

*Average.

TABLE II— Continued.

Names of Operators.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Monongahela River C. C. and C. Co.,	......	1	75	72	1,995	6,400	2	......	7	60	4,371	24	5,886	2,830	11	3
Pittsburg Coal Co.,	......	13	480	24	2.265	2,665	......	......	6	35	2,552	16	3,416	2,170	10	2
People's Coal Co.,	Allegheny,	......	......	2	150	300	......	......	......	......	......	......	......	......	1	......
Marine Coal Co.,	Allegheny,	4	152	......	......	......	......	......	1	1	......	2	50	......	1	......
Vesta Coal Co.,	Fayette,	1	100	11	2,350	2,450	......	......	......	10	900	7	744	425	......	3
C. Jutte & Co.,	Washington,	2	120	1	30	150	......	......	......	5	118	3	213	107	......	......
James W. Ellsworth & Co.,	Washington,	......	......	20	2,500	2,500	......	......	......	16	2,610	4	1,450	500	1	3
Henderson Coal Co.,	Washington,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Star Coal Co.,	Westmoreland,	......	......	2	200	200	......	......	......	3	......	......	......	......	......	......
John H. Jones,	Washington,	1	20	2	310	180	......	......	2	9	438	......	......	......	2	......
A. R. Budd,	Alle'gy & Wash.,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
B. Braznell & Son,	Westmoreland,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Charleroi Coal Works,	Washington,	......	......	5	480	480	......	......	2	4	480	4	415	415	2	......
W. H. Flint & Co.,	Washington,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Morris-Bailey Coal Co.,	Westmoreland,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Ella Coal Co.,	Allegheny,	......	......	3	234	......	......	......	2	4	620	2	......	......	2	......
Hazel Kirk Gas Coal Co.,	Allegheny,	......	......	2	150	300	......	......	......	3	525	1	522	110	1	......
Bunola Mining Co.,	Washington,	......	......	2	140	140	......	......	1	1	125	2	152	152	1	......
Shoenberger Coal Co.,	Allegheny,	......	......	2	200	200	......	......	1	2	......	1	......	......	1	......
Clyde Coal Co.,	Washington,	......	......	2	300	300	......	......	......	......	......	1	23	......	1	......
Stockdale Coal Co.,	Washington,	......	......	1	80	......	......	......	......	......	......	......	......	......	......	......
Total,	......	22	947	151	11,384	16,265	2	......	22	153	12,739	67	12,871	6,709	34	11

TABLE III—Showing the number of each class of employes at each colliery in the First Bituminous District during the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	Grand total, inside and outside.
Monongahela River Consolidated Coal and Coke Co.																	
Apollo,	Fayette,	1	2	200	....	15	5	5	228	1	3	3	......	2	10	19	247
Black Diamond,	Washington,	1	2	135	....	10	3	16	167	1	2	2	......	2	7	14	181
Beaumont,	Washington,	1	1	135	....	13	1	14	165	1	3	4	......	2	8	18	183
Camden,	Allegheny,	1	......	115	....	7	....	5	128	......	1	1	......	2	16	20	148
Coal Bluff,	Washington,	1	2	124	....	11	4	7	149	......	2	6	......	2	11	21	170
Cincinnati,	Washington,	1	2	148	....	14	2	5	172	......	3	3	......	2	13	21	193
Catsburg,	Washington,	1	4	161	....	15	2	40	223	......	4	4	......	2	11	21	244
Clipper,	Washington,	1	......	86	....	5	1	1	94	......	1	2	......	2	7	12	106
Crescent,	Washington,	1	1	100	....	15	1	18	136	......	1	3	......	2	9	15	151
Eclipse,	Washington,	1	1	150	....	16	6	7	181	......	4	4	......	2	19	29	210
Fayette City,	Fayette,	1	2	177	....	16	2	12	210	......	3	6	......	2	11	22	232
Gallatin,	Allegheny,	1	2	130	....	14	5	26	178	......	3	3	......	2	22	30	208
Hilldale,	Washington,	1	......	135	....	6	2	3	147	......	2	2	......	2	5	11	158
Ivill,	Washington,	1	2	121	....	11	4	9	148	......	3	3	......	2	10	18	166
Knob,	Washington,	1	2	172	....	16	6	14	211	......	3	6	......	2	14	25	236
Little Redstone,	Fayette,	1	2	125	....	19	2	20	169	......	3	5	......	2	11	21	190
Mongah,	Allegheny,	1	2	150	....	18	4	20	195	......	5	3	......	2	20	30	225
Milesville,	Allegheny,	1	1	113	....	12	4	18	149	......	2	3	......	2	7	14	163
Rock Run,	Allegheny,	1	......	125	....	10	1	2	139	......	2	......	......	2	10	14	153
Risher,	Allegheny,	1	......	180	....	14	....	6	201	......	3	3	......	2	16	24	225
Rostraver,	Westmoreland,	1	......	74	....	7	....	7	89	......	2	2	......	1	8	13	102
Tremont,	Fayette,	1	2	148	....	19	5	27	202	......	3	6	......	2	21	32	234
Vigilant,	Washington,	1	1	128	....	20	3	16	169	......	4	4	......	2	13	23	192
Walton,	Allegheny,	2	......	226	....	16	5	6	255	......	3	5	......	2	13	23	278
Total,	....	25	31	3,358	....	319	68	304	4,105	3	65	83	......	47	292	490	4,595

Pittsburg Coal Co.																	
Arnold Nos. 1-3,	Fayette,	1	3	150	....	18	8	6	186	......	5	3	......	2	11	21	207
Arnold No. 2,	Fayette,	1	1	80	....	10	2	10	104	......	1	3	......	2	6	12	116
Banner,	Washington,	1	1	55	2	9	....	3	71	1	3	4	......	2	5	15	86
Cleveland,	Fayette,	1	2	135	....	17	4	15	174	......	5	5	......	2	12	24	198
Courtney,	Washington,	1	1	40	2	5	....	1	50	1	1	3	......	......	4	9	59
Equitable,	Westmoreland,	1	1	94	....	10	2	14	122	1	3	4	......	1	9	18	140
Eclipse,	Washington,	1	2	116	13	15	2	5	154	1	2	6	......	1	12	22	176
Fidelity,	Washington,	1	......	30	....	2	....	1	34	......	1	......	......	......	2	3	37
Germania,	Washington,	1	......	90	....	12	....	3	106	......	3	2	......	1	14	20	126
Little Squaw,	Washington,	1	1	90	11	9	2	1	115	......	3	2	......	......	10	15	130
Manown,	Allegheny,	1	1	55	....	6	2	11	76	1	4	3	......	2	7	17	93
North Webster,	Westmoreland,	1	2	83	....	10	3	13	112	1	3	3	......	1	11	19	131
Nottingham,	Washington,	1	1	69	....	10	4	5	90	......	2	4	......	1	8	15	105
Somers Nos. 2-4,	Westmoreland,	2	2	170	....	12	7	39	232	......	3	4	......	1	26	34	266
Somers No. 3,	Westmoreland,	1	......	40	....	4	5	10	60	......	......	1	......	1	3	5	65
Somers No. 5,	Westmoreland,	1	......	12	....	3	....	12	28	......	......	......	......	......	12	12	40
Total,		17	18	1,309	28	152	41	149	1,714	6	39	47	......	17	152	261	1,975
People's Coal Co.																	
Clinton,	Allegheny,	1	1	86	21	10	....	....	119	1	2	2	......	2	8	15	134
Marine Coal Co.																	
Marine,	Fayette,	1	1	100	10	10	1	2	125	......	2	2	......	2	14	50	175
C. Jutte & Co.																	
Coal Centre,	Washington,	2	1	123	3	10	1	....	140	1	2	2	......	1	12	18	158
Vesta Coal Co.																	
Vesta No. 1,	Washington,	3	3	579	....	50	8	17	660	1	4	12	......	2	21	40	700
Vesta No. 2,	Washington,	1	1	131	....	14	3	8	158	1	2	4	......	1	9	17	175
Vesta No. 3,	Washington,	1	2	161	....	20	4	15	203	1	2	6	......	1	15	25	228
Total,		5	6	871	....	84	15	40	1.021	3	8	22	......	4	45	82	1,103
James W. Ellsworth & Co.																	
Ellsworth No. 1,	Washington,	1	1	65	....	6	3	45	121	......	3	5	......	1	15	24	145
Ellsworth No. 2,	Washington,	1	1	35	....	4	2	30	73	......	2	3	......	1	12	18	91
Ellsworth No. 3,	Washington,	1	1	15	....	3	1	15	36	......	2	4	......	1	10	17	53
Ellsworth No. 4,	Washington,	1	1	10	....	2	....	10	24	......	2	2	......	1	6	11	35
Total,		4	4	125	....	15	6	100	254	......	9	14	......	4	43	70	324
Henderson Coal Co.																	
Irons,	Westmoreland,	1	......	46	....	3	2	1	53	......	1	......	......	1	6	8	61
Star Coal Co.																	
Star,	Washington,	1	1	81	1	7	2	8	101	......	1	3	......	......	10	14	115

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total, inside and outside.
		Inside foreman or mine boss.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
John H. Jones.																	
Bertha,	Allegheny,	1	......	60	4	6	1	5	77	......	2	2	2	2	11	19	96
Blanche,	Washington,	1	......	35	2	5	....	11	54	......	1	3	1	3	5	13	67
Total,		2	......	95	6	11	1	16	131	......	3	5	3	5	16	32	163
A. R. Budd.																	
Budd,	Westmoreland,	1	......	87	....	7	2	4	101	1	2	2	......	1	12	18	119
Hazel Kirk Gas Coal Co.																	
Hazel Kirk,	Washington,	1	1	123	....	9	2	12	148	1	2	3	......	2	11	19	167
Bunola Mining Co.																	
Bunola,	Allegheny,	1	......	84	3	12	2	7	109	1	2	2	......	2	5	12	121
Shoenberger Coal Co.																	
Shoenberger,	Washington,	1	1	182	1	12	2	4	203	......	3	2	2	2	6	15	218
Clyde Coal Co.																	
Clyde,	Washington,	1	......	50	3	6	1	....	61	1	2	2	......	......	8	13	74
Stockdale Coal Co.																	
Acme,	Washington,	1	......	95	....	5	1	3	105	......	2	1	......	2	8	13	118

B. Braznell & Son.																	
Allen,	Washington,	1	......	30	....	2	....	1	34	......	1	......	......	1	2	4	38
Charleroi Coal Works.																	
Charleroi No. 1,	Washington,	1	1	160	....	18	4	5	189	......	2	3	......	2	10	17	206
Charleroi No. 2,	Washington,	......	......	5	....	....	....	....	5	......	......	......	......	......	2	2	7
Total,	....	1	1	165	....	18	4	5	194	......	2	3	......	2	12	19	213
Morris Bailey Coal Co.																	
Peters Creek,	Allegheny,	1	......	75	... .	3	1	2	82	1	1	......	......	2	5	9	91
Ella Coal Co.																	
Ella,	Westmoreland,	1	4	133	9	20	5	21	193	1	4	4	1	2	28	40	233
Grand total,	....	69	70	7,218	85	715	157	679	8,993	20	153	199	6	99	725	1,202	10,195

TABLE III—Continued.

Name of Operators.	County.	Number of Days Worked in Each Month.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Monongahela River Con. C. and C. Co.,	....	17.2	9.3	14.1	18.2	21.4	19.8	13.9	13.3	13	14.9	11.7	12.2	179
Pittsburg Coal Co.,	....	11.4	7.7	8.9	9.5	11.6	15.5	16.1	16.2	14.3	14.2	16.2	14.2	155.8
People's Coal Co.,	Allegheny,	26	19	22	18	22	25	26	24	23	25	1	4	235
Marine Coal Co.,	Fayette,	....	3	12	18	15	17	22	23	18	23	23	19	193
C. Jutte & Co.,	Washington,	25	14¼	19½	15¼	10	20½	19¾	23	14¾	21½	19¼	14¾	216½
Vesta Coal Co.,	Washington,	21.1	17	23.3	21.3	25.1	22.8	22.3	23.5	22.6	23.5	24	25.6	*272.1
James W. Ellsworth & Co.,	Washington,	1.7	5.7	7.2	12.7	11.7	14.7	19.2	20.2	18.7	20	18	18	167.8
Henderson Coal Co.,	Westmoreland,	21	22	22	15	25	23	25	23	21	22	22	20	261
Star Coal Co.,	Washington,	....	....	....	17	24	18	12½	16	13	8	14	10½	133
John H. Jones,	Alle'gy & Wash.	....	....	3	7	20 6-10	20	23 5-10	25 2-10	19 6-10	21.1	17	17.6	174.6
A. R. Budd,	Westmoreland,	15	20	22	24	23	24	18	16	14	19	20	20	235
Hazel Kirk Gas Coal Co.,	Washington,	5	4	17	16	23	25	25	21	21	22	21	22	222
Bunola Mining Co.,	Allegheny,	26	18	21	20	20	25	21	11	10	24	23	16	235
Shoenberger Coal Co.,	Washington,	23	22	25	24	24	24	23	24	23	24	23	21	280
Clyde Coal Co.,	Washington,	21	10	17	20	23	20	12¼	16	22	19¼	23	20	223½
Stockdale Coal Co.,	Washington,	23	23	16	17	24	23	23	22	17	17	22	15	242
B. Braznell & Son,	Washington,	24	21	17	19	21	19	10	11	9	....	....	....	151
Charleroi Coal Works,	Washington,	21	19	23	23	24	24	23	21	17	16	18	13	242
Morris Bailey Coal Co.,	Allegheny,	22	20	20	17	17	24	24	21	21	25	18	....	229
Ella Coal Co.,	Westmoreland,	21	22	24	19	21	23	18	24	22	25	21	22	262
Average,	....	14.6	10.2	13.5	15.6	18.4	19.1	16.9	16.8	15.4	16.7	15.4	14.4	....

TABLE IV—List of fatal accidents that occurred in and about the mines of the First Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Feb.	8	Michael Tomashih,	Slav,	Miner,	28	M.	1	2	Catsburg,	Washington,	Instantly killed by a fall of slate.
March	16	Joseph Loveskie,	Pole,	Miner,	42	M.	1	4	Cincinnati,	Washington,	Instantly killed by a fall of slate.
	22	John Ozzella,	Austrian,	Miner,	32	S.	....	....	Galatin,	Allegheny,	Instantly killed by a fall of slate.
	25	Stunny Stescher,	Pole,	Miner,	42	M.	1	3	Ellsworth No. 2,	Washington,	Instantly killed by being struck by ascending cage.
April	12	John Kornopshie,	Pole,	Miner,	41	M.	1	5	Eclipse, River,	Washington,	Instantly killed by a fall of slate.
	16	Elias Carlson,	Finn,	Miner,	45	M.	1	1	Vesta No. 1,	Washington,	Fatally injured by a fall of slate.
	19	August Stilling,	French,	Miner,	39	S.	....	....	Charleroi,	Washington,	Fatally injured by a fall of slate.
	25	Alexander Lee,	American,	Miner,	33	S.	....	....	Walton, Upper,	Allegheny,	Fatally injured by a fall of slate.
	26	John Pawka,	Slav,	Miner,	31	M.	1	2	Acme,	Washington,	Instantly killed by a fall of slate.
May	8	John Chillka,	Slav,	Miner,	28	S.	....	....	Charleroi,	Washington,	Instantly killed by a fall of slate.
	9	Andrew Kalman,	Hungarian,	Miner,	17	S.	....	....	Acme,	Washington,	Instantly killed by a fall of slate.
	11	James Gallagher,	American,	Miner,	45	M.	1	3	Coal Bluff,	Washington,	Fatally injured by being caught by a car.
	13	Michael Haladrich,	Pole,	Miner,	26	S.	....	....	Catsburg,	Washington,	Instantly killed by a fall of slate.
	21	James Blakely,	English,	Miner,	57	M.	1	1	Courtney,	Washington,	Instantly killed by a fall of slate.
	27	Joseph Yuhar,	Pole,	Miner,	22	M.	1	1	Gallatin,	Allegheny,	Fatally injured by a piece of slate sliding on him.
June	9	John Repuskie,	German,	Miner,	30	M.	1	3	Ivill,	Washington,	Fatally injured by being caught between car and pillar.
	12	Frank Fisher,	Pole,	Miner,	61	S.	....	....	Cincinnati,	Washington,	Instantly killed by being caught by an empty dilly trip.
	21	Jeremiah Cavanaugh,	Irish,	Miner,	40	M.	....	....	Milesville,	Allegheny,	Instantly killed by a fall of slate.
	24	George Jocabi,	Slav,	Miner,	33	M.	1	1	Irons,	Westmorel'd	Instantly killed by a premature blast.
July	2	John Carey,	Hungarian,	Miner,	51	M.	1	6	Mongah,	Allegheny,	Instantly killed by a fall of slate.
	7	Michael Holavar,	Hungarian,	Miner,	24	M.	1	....	Acme,	Washington,	Instantly killed by a fall of horse back roof.
	16	Petro Bushelli,	Italian,	Miner,	59	M.	1	3	Tremont,	Fayette,	Fatally injured by a fall of coal and slate.
	17	John Christa,	Slav,	Day hand,	45	M.	1	1	Little Redstone,	Fayette,	Killed instantly by a fall of rock.
Aug.	1	William Rolling,	English,	Miner,	42	M.	1	....	Eclipse, River,	Washington,	Killed instantly by a fall of slate.
	1	Louis Jones,	American,	Miner,	18	S.	....	....	Catsburg,	Washington,	Fatally injured by a fall of coal and slate.
	2	August Kentalo,	Finn,	Miner,	26	M.	1	4	Vesta No. 1,	Washington,	Fatally injured by a fall of slate.
	8	Metrey Knezie,	Bohemian,	Miner,	64	S.	....	....	Eclipse, Railroad,	Washington,	Instantly killed by a fall of slate.

TABLE IV—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and cause of Accident in Brief.
	17	John Johnson,	Finn,	Miner,	24	M.	1	1	Tremont,	Fayette,	Instantly killed by a fall of slate.
	19	John McMann,	American,	Driver,	27	M.	1	....	Marine,	Fayette,	Fatally injured by being kicked by a mule.
	30	William Smith,	English,	Check weighman,	44	M.	1	....	Banner,	Washington,	Fatally injured by being struck by a partition which had been struck by a runaway car.
Sept.	3	James Parker,	Canadian,	Miner,	20	S.	....	....	Arnold No. 1,	Fayette,	Killed instantly by a fall of shale.
	13	Peter Bravoskie,	Slav,	Miner,	32	M.	1	1	Hazel Kirk,	Washington,	Instantly killed; caught by an ascending cage.
Oct.	1	Stanko Gondith,	Austrian,	Miner,	29	M.	1	1	Hazel Kirk,	Washington,	Instantly killed by a fall of slate.
	11	Stephen Gerrecki,	Hungarian,	Miner,	27	M.	1	2	Germania,	Washington,	Fatally injured by a fall of slate.
	23	William Booth,	English,	Miner,	47	M.	1	3	Equitable,	Westmorel'd	Fatally injured by a fall of slate.
	28	George Anchak,	Slav,	Miner,	28	M.	1	2	Bertha,	Allegheny,	Fatally injured by a fall of slate.
	29	Andrew Gorech,	German,	Miner,	43	M.	1	2	Ella,	Allegheny,	Instantly killed by a fall of slate.
	30	Arthur Dehore,	French,	Miner,	15	S.	....	....	Mongah,	Allegheny,	Fatally injured by a fall of slate.
Nov.	18	Henry Fields,	American,	Machine helper,	35	M.	1	4	Tremont,	Fayette,	Fatally injured by a fall of slate.
Dec.	4	Frank Baroskie,	Russian Pole,	Driver,	21	S.	....	....	Ellsworth No. 3,	Washington,	Instantly killed by a fall of roof.
	20	Andrew Sarney,	Slav,	Loader,	25	S.	....	....	Beaumont,	Washington.	Instantly killed by a fall of slate.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the First Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	5	Matthew Riley,	American	Driver,	20	S.	Shoenberger,	Washington,	Hand crushed and cut; caught between cars.
	8	Thomas Furlong,	American	Loader,	21	S.	Coal Bluff,	Washington,	Injured by a fall of slate.
	9	Emelio Romerso,	Italian,	Miner,	26	M.	Cleveland,	Fayette,	Injured by being struck by a piece of coal.
	11	Brandon Venelaskey,	Pole,	Miner,	20	S.	Eclipse, Railroad,	Washington,	Back bruised by a fall of slate.
	16	Jacob Parring,	German,	Driver,	21	M.	Shoenberger,	Washington,	Hand cut; caught between car and pillar.
	16	John Poindell,	American,	Miner,	15	S.	Walton, Upper,	Allegheny,	Leg broken by a fall of coal and slate.
	17	Andrew Gokcierie,	Pole,	Miner,	26	S.	Coal Centre,	Washington,	Injured by a fall of coal and slate.
	19	John Hidoff,	Hungarian,	Miner,	69	S.	Somers No. 2,	Washington,	Foot injured by a fall of slate.
	29	Stephen Tate,	American,	Miner,	28	S.	Walton, Upper,	Allegheny,	Leg broken by a fall of slate.
	31	Thomas Brojan,	American,	Driver,	18	S.	Cleveland,	Fayette,	Wrist lacerated by falling.
Feb.	1	John Anders,	American,	Driver,	40	M.	Mongah,	Allegheny,	Injured by cars.
	3	James Miller, Sr.,	Scotch,	Cutter,	39	M.	Fayette City,	Fayette,	Ankle broken by fall of slate.
	4	Michael Hoosick,	Slav,	Loader,	52	M.	Arnold No. 2,	Fayette,	Internal injuries by fall of slate.
	5	Herbert Clark,	English,	Engineer,	24	M.	Shoenberger,	Washington,	Leg broken by cars.
	5	James Miller,	Scotch,	Pick boy,	16	S.	Fayette City,	Fayette,	Thigh dislocated; caught between car and coal pillar.
	12	John Humrock,	Slav,	Miner,	19	S.	Crescent,	Washington,	Injured by cars.
	25	Antonio Pirinilli,	Italian,	Miner,	37	M.	Catsburg,	Washington,	Knee dislocated by fall of slate.
March	4	Andrew Valesko,	Hungarian,	Loader,	50	M.	Gallatin,	Allegheny,	Leg broken by fall of coal and slate.
	5	John Rouse,	American,	Miner,	35	M.	Ella,	Allegheny,	Leg broken by a fall of coal and slate.
	11	John Pulpru,	American,	Driver,	24	S.	Cleveland,	Fayette,	Run over by a car.
	21	William Dryer,	American,	Miner,	40	M.	Fayette City,	Fayette,	Ankle bruised by slate rolling against it.
	23	Henry Becket,	American,	Miner,	63	S.	Eclipse, Railroad,	Washington,	Leg broken by a fall of coal.
	23	Frank Lowrea,	Italian,	Machine man,	26	S.	Tremont,	Fayette,	Injured by the chain of a mining machine.
	25	David Spencer,	American,	Miner,	19	S.	Mongah,	Allegheny,	Foot and arm injured by cars.
April	4	John Vofrance,	Italian,	Miner,	25	S.	Hazel Kirk,	Washington,	Collar bone fractured by fall of coal.
	10	John Neil,	Scotch,	Miner,	60	M.	Ivill,	Washington,	Injured; caught between cars.
	11	Christopher Kirper,	German,	Miner,	35	M.	Eclipse, River,	Washington,	Leg broken by a car.
	15	William Fuller,	American,	Stone mason,	54	M.	Walton, Lower,	Allegheny,	Toes broken by a fall of slate.
	16	Jasper Vanriper,	Welsh,	Miner,	37	M.	Beaumont,	Washington,	Leg broken by a fall of slate.
	22	Christopher Lax,	American,	Driver,	18	S.	Catsburg,	Washington,	Injured by cars.
	24	Joseph Kapis,	Slav,	Machine runner,	55	M.	Eclipse, Railroad,	Washington,	Back bruised by a fall of "horse back" roof.

TABLE V—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
	29	Howard Bennington,	American,	Miner,	20	S.	Ivill,	Washington,	Finger caught between sprag and wheel.
May	3	Bragie Seemia,	Italian,	Miner,	28	S.	Ivill,	Washington,	Toes mashed by fall of slate.
	3	G. A. Slatier,	Hungarian,	Machine runner,	21	S.	Ivill,	Washington,	Toe mashed by mining machine.
	6	Abram Marry,	Italian,	Miner,	19	S.	Mongah,	Allegheny,	Injured by flying coal from a shot.
	9	John Wassell,	Austrian,	Miner,	50	M.	Gallatin,	Allegheny,	Back injured by a fall of slate.
	13	Phillip Coulter,	Irish,	Miner,	56	M.	Black Diamond,	Washington,	Thigh injured by being caught between cars.
	14	A. V. Barland,	Scotch,	Mine foreman,	43	M.	Gallatin,	Allegheny,	Face severely injured by a bar while lifting a machine.
	15	Harry Alkenelose,	English,	Roadman,	44	M.	Vesta No. 2,	Washington,	Foot injured; struck by a rail.
	16	David Crockett,	English,	Loader,	50	S.	Ella,	Allegheny,	Injured by coal from shot.
	17	George Vickerr,	English,	Timberman,	58	M.	Beaumont,	Washington,	Ankle broken by a fall of rock.
	20	Thomas Woods,	English,	Miner,	36	M.	Vesta No. 2,	Washington,	Foot injured; struck by a post.
	22	John Grimes,	American,	Miner,	18	S.	Camden,	Allegheny,	Leg broken by a fall of slate.
	22	Joseph Crossland,	American,	Driver,	40	M.	Ella,	Allegheny,	Ribs fractured; caught between car and post.
	22	Richard McClay,	American,	Driver,	35	S.	Black Diamond,	Washington,	Breast injured; kicked by a mule.
	22	William Miller,	American,	Driver,	27	M.	Black Diamond,	Washington,	Hand cut; caught between car and rib.
	27	Thomas Speerr,	American,	Driver,	30	S.	Shoenberger,	Washington,	Arm injured; caught between car and rib.
June	3	Joseph Axton,	American,	Miner,	27	M.	Vesta No. 1,	Washington,	Back injured by a fall of coal and slate.
	3	Balser Miller,	American,	Driver,	31	M.	Somers No. 3,	Westmoreland,	Artery broken on thigh; kicked by a mule.
	3	John Cutter,	Slav,	Miner,	28	M.	Black Diamond,	Washington,	Leg broken; caught between car and pillar.
	4	Clark Gladfelter,	American,	Loader,	18	S.	Arnold No. 1,	Fayette,	Arm broken; caught between car and post.
	5	Powell Colombene,	Italian,	Miner,	43	M.	Mongah,	Allegheny,	Leg broken; by a fall of coal.
	5	John Johnson,	Finn,	Loader,	29	M.	Knob,	Washington,	Foot injured by a fall of slate.
	7	Dominick Gabriel,	Italian,	Miner,	20	S.	Little Squaw,	Washington,	Arm injured by powder from a shot.
	12	James Park,	Scotch,	Driver,	26	S.	Marine,	Fayette,	Finger broken between car and rib.
	14	John A. Cooper,	American,	Miner,	37	M.	Gallatin,	Allegheny,	Back injured by fall of coal.
	14	Nicholas Laceo,	Italian,	Miner,	23	S.	Rostraver,	Westmoreland,	Injured by a fall of "horse back" roof.
	14	Andrew Bradburn,	American,	Driver,	24	S.	Eclipse Railroad,	Washington,	Injured by being caught between car and pillar.
	15	Saffils Condeto,	Italian	Miner,	41	S.	Little Squaw,	Washington,	Slight injury by fall of slate.
	17	John Lloyd,	Welsh,	Miner,	28	S.	Marine,	Fayette,	Foot cut off by a fall of slate.

	18	Gregory Kane,	Irish,	Roadsman,	43	M.	Arnold No. 1,	Fayette,	Left leg badly sprained by a fall at tipple.
	20	Paul Kramper,	Slav,	Miner,	45	M.	Little Redstone,	Fayette,	Slightly injured; struck by a post.
	24	Joshua Wyeth,	American,	Carpenter,	42	S.	Hazle Kirk,	Washington,	Shoulder lacerated; struck by a cage.
	28	Thomas Fox,	American,	Miner,	30	S.	Milesville,	Allegheny,	Ankle badly sprained by a fall of coal.
July	1	Michael Prinage,	Slav,	Miner,	55	M.	Hazel Kirk,	Washington,	Leg broken by fall of slate.
	10	John Landers,	American,	Miner,	29	S.	Iron City,	Westmoreland,	Arm broken by cars.
	13	James Rogers,	American,	Pumpman,	17	S.	Gallatin,	Allegheny,	Injured by being caught between cogs of pump.
	15	Henry Fleming,	American,	Driver,	23	M.	Mongah,	Allegheny,	Right leg sprained by cars.
	16	Stephen Flasko,	Hungarian,	Miner,	48	M.	Risher,	Allegheny,	Leg badly bruised by a fall of "horse back" roof.
	17	John Day,	English,	Miner,	30	S.	Star,	Washington,	Bruised by a fall of roof and clay.
	20	Joseph Mezie,	Hungarian,	Miner,	59	M.	Germania,	Washington,	Leg broken by a fall of slate.
	20	William Louttit,	American,	Roadsman,	33	M.	Mongah,	Allegheny,	Finger cut; caught between rails.
	20	John Knight,	Hungarian,	Machine helper,	26	M.	Ivill,	Washington,	Foot injured by mining machine; necessitating amputation.
	21	John Barosh,	Slav,	Miner,	24	M.	Mongah,	Allegheny,	Thumb cut off between cars.
	22	Andrew Varia,	Italian,	Miner,	23	S.	Coal Bluff,	Washington,	Knee joint fractured by fall of coal.
	25	Frank Lee,	English,	Miner,	20	S.	Blyth,	Washington,	Body injured by fall of slate.
	26	Jacob Reis,	German,	Miner,	45	M.	Ella,	Allegheny,	Leg broken by fall of slate.
	29	Edward Garlin,	English,	Miner,	50	M.	Arnold No. 1,	Fayette,	Injured by fall of slate.
	31	Guiseppe Sepele,	Italian,	Loader,	32	M.	Cleveland,	Fayette,	Severely injured by a fall of slate.
Aug.	2	Michael Cowield,	Slav,	Miner,	26	S.	Marine,	Fayette,	Slightly injured by fall of slate.
	3	Joseph Barton,	English,	Miner,	35	M.	Hilldale,	Washington,	Back injured by fall of slate.
	6	Frank Herron,	American,	Miner,	25	S.	Star,	Washington,	Foot broken by a fall of coal.
	10	George Benson,	Slav,	Loader,	22	S.	Ella,	Allegheny,	Leg broken by a fall of slate.
	14	Robert Raley,	American,	Loader,	21	S.	Cleveland,	Fayette,	Back sprained by a fall of coal.
	14	Joseph Bernot,	Slav,	Miner,	40	S.	Clyde,	Washington,	Injured by coal from a shot.
	21	Michael Stanko,	Slav,	Miner,	26	M.	Shoenberger,	Washington,	Leg broken by a fall of slate.
	24	Willis Hodgson,	American,	Driver,	27	M.	Clinton,	Allegheny,	Internal injuries by cars.
	27	Joseph Copolis,	Pole,	Loader,	29	S.	Gallatin,	Allegheny,	Injured by fall of slate.
	29	James Rue,	American,	Boss driver,	30	M.	Gallatin,	Allegheny,	Leg broken; piece of rock rolled on him.
	29	David Spencer,	American,	Timberman,	49	M.	Gallatin,	Allegheny,	Injured by fall of coal.
	29	Thomas Rutt,	Italian,	Loader,	40	M.	Rostraver,	Westmoreland,	Hand fractured by a fall of slate.
	30	Noah Roberts,	American,	Miner,	18	S.	North Webster,	Westmoreland,	Leg broken by a fall of slate.
	30	John Ondergash,	Slav,	Miner,	38	M.	Crescent,	Washington,	Cut and bruised by fall of coal.
	30	Orland Server,	Italian,	Loader,	35	M.	Rostraver,	Westmoreland,	Thigh fractured by a fall of slate.
Sept.	2	John Kremus,	Slav,	Miner,	28	M.	Acme,	Washington,	Leg broken by a fall of coal.
	3	Robert Ammon,	American,	Moterman,	20	S.	Ella,	Allegheny,	Injured; caught between motor and entry pillar.
	3	Michael Andro,	Pole,	Miner,	33	M.	Somers No. 2,	Westmoreland,	Injured by a fall of slate.
	4	Michael Enright,	Irish,	Loader,	63	M.	Eclipse, Railroad,	Washington,	Leg broken by a fall of coal.
	4	Bernard Eborio,	Italian,	Miner,	30	S.	Somers No. 3,	Westmoreland,	Injured by fall of slate.
	11	Joseph Barhoda,	Slav,	Miner,	44	M.	Clinton,	Allegheny,	Injured by a fall of slate.
	11	Archibald Merenor,	Italian,	Miner,	24	S.	Tremont,	Fayette,	Hands severely burned by powder.
	13	Winfield Bush,	American,	Driver,	41	M.	Mongah,	Allegheny,	Injured by a car.
	17	Henry Penn,	American,	Miner,	24	M.	Peters Creek,	Allegheny,	Injured on body by fall of slate.
	18	Jacob Backus,	Slav,	Loader,	14	S.	Eclipse, Railroad,	Washington,	Injured by a fall of slate.
	19	Frederick Granep,	Pole,	Trapper,	15	S.	Vesta No. 3,	Washington,	Foot injured by cars.
	25	Peter Broskle,	Pole,	Miner,	18	S.	Vesta No. 3,	Washington,	Burned by powder.
	25	William Henry,	German,	Miner,	27	S.	Risher,	Allegheny,	Severely injured by fall of slate.
	30	Stona Libeti,	Slav,	Machine man,	25	S.	Ellsworth No. 2,	Washington,	Finger cut off by fall of slate.
Oct.	1	Adam Cabar,	Austrian,	Loader,	66	M.	Somers No. 2,	Westmoreland,	Injured by fall of slate.

TABLE V—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident inBrief.
Oct.	14	Joseph Maxinskey,	Pole,	Loader,	35	M.	Ella,	Westmoreland,	Severely burned by an explosion of fire damp.
	14	Giovanni Dorizuzie,	Italian,	Loader,	35	M.	Cleveland,	Fayette,	Leg broken by fall of slate.
	15	John Smith,	Austrian,	Miner,	35	M.	Eclipse, Railroad,	Washington,	Leg broken by fall of slate.
	24	John Powers,	American,	Wireman,	26	M.	Bertha,	Allegheny,	Leg broken by cars.
	24	Grant Jackson,	American,	Driver,	31	M.	Nottingham,	Washington,	Injured by mining machine.
	25	Michael Kotho,	Hungarian,	Loader,	43	M.	Somers No. 2,	Westmoreland,	Injured by fall of slate.
	31	Agido Brondi,	Italian,	Miner,	32	M.	Milesville,	Allegheny,	Leg broken by a fall of slate.
	31	John Dohanash	Hungarian,	Gripper,	14	S.	Acme,	Washington,	Leg broken; caught between cars.
Nov.	4	Elmer Snyder,	American,	Cager,	23	M.	Arnold No. 2,	Fayette,	Injured; struck by a cage.
	5	Paul Kramper,	Slav,	Miner,	46	M.	Little Redstone,	Fayette,	Seriously injured by a fall of coal.
	9	Joseph Braceh,	Belgian,	Miner,	48	M.	Crescent,	Washington,	Injured by fall of coal.
	12	John Pulpur,	American,	Driver,	25	S.	Cleveland,	Fayette,	Injured by cars.
	12	Michael Krupper,	Slav,	Driver,	23	M.	Acme,	Washington,	Injured between cars and timber.
	13	James Russo,	Italian,	Miner,	57	M.	Equitable,	Westmoreland,	Leg broken by fall of coal.
	15	James A. Moore,	Irish,	Blacksmith,	43	M.	Arnold No. 2,	Fayette,	Leg broken; caught between cars.
	25	William Waker,	English,	Miner,	49	M.	Marine,	Fayette,	Foot injured by fall of slate.
	27	William Cain,	American,	Brakeman,	21	M.	Mongah,	Allegheny,	Foot injured; caught between cars.
	27	William Haney,	American,	Trapper,	13	S.	Nottingham,	Washington,	Head bruised by a runaway mule.
	29	Angelo Doe,	Italian,	Miner,	18	S.	Catsburg,	Washington,	Severely injured by a fall of slate.
Dec.	3	James N. Carroll,	American,	Driver,	18	S.	Somers No. 2,	Fayette,	Injured by a fall of coal.
	4	Joseph Wilson,	American,	Driver,	21	S.	Hilldale,	Washington,	Collar bone broken between car and roof.
	4	Edgar Stewart,	American,	Trip catcher,	21	S.	Arnold No. 1,	Fayette,	Arm broken by falling on rail.
	4	August Frotta,	American,	Miner,	15	S.	Gallatin,	Allegheny,	Thigh injured by fall of slate.
	5	Joseph Creevey,	American,	Driver,	22	S.	Ella,	Allegheny,	Collar bone broken by car.
	9	James Seatt,	American,	Miner,	25	S.	Hazel Kirk	Washington,	Head injured by fall of slate.
	10	Alexander Decker,	American,	Miner,	36	M.	Hilldale,	Washington,	Leg broken by a fall of slate.
	13	Gabatore Nadalfo,	Italian,	Loader,	26	S.	Knob,	Washington,	Leg injured by cars.
	17	James Hitchins	English,	Miner,	35	M.	Mongah,	Allegheny,	Head cut by a fall of slate.
	21	Peter Easterson,	Finn,	Loader,	21	S.	Knob,	Washington,	Thigh broken by a fall of slate.
	21	Abram Franks,	American,	Switchman,	16	S.	Knob,	Washington,	Injured on body by car.
	26	William Smith,	American,	Driver,	23	S.	Ivill,	Washington,	Body injured from coming in contact with entry pillar.
	30	Pelegra Pelegrini,	Italian,	Miner,	24	S.	Milesville	Allegheny,	Leg broken by a fall of coal and slate.
	30	Lawrence Murphy,	Irish,	Driver,	38	M.	Ivill,	Washington,	Leg broken; caught between cars.

Second Bituminous District.

ALLEGHENY, INDIANA AND WESTMORELAND COUNTIES.

Greensburg, Pa., March 20, 1902.

Hon. James W. Latta, Secretary of Internal Affairs:

Sir: I have the honor to herewith submit my report as Inspector of Mines for the Second Bituminous District for the year ending December 31, 1901, in compliance with section 2 of article 10 of the Bituminous mining act, approved the 15th day of May, 1893.

My report of 1900 showed that there were in the district 100 mines which produced 13,468,199 tons of coal. Four million two hundred and eighty thousand three hundred and fifty-four tons of coke were manufactured.

The State Board of Examiners at their session in Pittsburg in May last revised the districts, and created two additional ones, Nos. 11 and 12, making twelve in all.

In revising the boundary lines of the Second district, thirty-eight mines were taken from it and two others were added, as follows: Six of the mines taken were placed in the Third district, six in the Seventh, and twenty-six in the Eleventh. The two mines added were, one from the Third and one from the Sixth district. The Second district as rearranged contains sixty-two mines.

Seven new mines were opened—three of which produced no coal—and two small mines increased the number of persons employed in each, until they now come under the law, making nine additional mines. One mine, Maher No. 2, was worked out and abandoned, leaving seventy-two mines in the district at the end of the year, sixty-nine of which produced coal, including the abandoned mine.

The sixty-two mines which remained in the district after the rearrangement; produced 7,648,980 tons of coal and 1,377,133 of coke during the year 1900, while in 1901 the production, including the new mines, was 8,183,364 tons of coal and 1,498,520 of coke an increase of 534,384 tons of coal and 121,387 tons of coke.

The two mines added from the Third and Sixth districts produced 39,367 tons of coal, making the total production of coal for the year 8,222,731 tons.

There has also been an increase in the number of persons employed. In 1900 the number of persons employed in and about the sixty-two mines mentioned was 10,036. In 1901, it was 11,440, including those employed in and about the new mines, an increase of 1,404. The two mines added from the Third and Sixth districts employed seventy-seven persons, making a total of 11,517 persons employed at the close of the year.

The total number of accidents reported as having occurred in the district was 111, of which twenty-nine were fatal.

The number of wives made widows by these fatalities was nineteen, and the number of children left orphans was forty-nine.

The decrease in the number of fatalities, as compared with that of 1900, was twelve.

The increase of non-fatal accidents was forty-five. Quite a number of these, as will be seen by Table 5, were not of a serious nature.

I am pleased to report that, with but few exceptions, the condition of the mines has been improved. This is true especially in regard to ventilation. Three furnaces and five fans have been put in operation, and four small fans have been replaced by larger ones, and all are now giving good results.

The report contains the usual tables and statistics, with a brief description of the mines, together with the most important improvements made; also a description of the fatal accidents and a report of the annual examination for mine foreman certificates, together with the names of applicants who have passed successful examinations and received certificates of competency for mine foreman, as shown by the records of the examining board, from the passage of the act of May 15, 1893, relating to Bituminous coal mines, up to and including the year 1901.

One violation of the mining law was reported to me during the year, upon the basis of which I made an information against one John Youchman, a roadman, for carrying matches, pipe and other smokers' articles into the Puritan or Baggaley mine of the American Coke Company, in which locked safety lamps were used, a statement of which is also made a part of this report.

All of which is respectfully submitted.

C. B. ROSS,
Inspector.

Production of Coal in Tons During the Year 1901.

Westmoreland Coal Company,	1,347,410
Penn Gas Coal Company,	465,155
Greensburg Coal Company,	283,601
Jamison Coal and Coke Company,	381,580
Loyalhanna Coal and Coke Company,	344,568
Hostetter Connellsville Coke Company,	538,000
American Coke Company,	532,842
Atlantic Crushed Coke Company,	90,980
The Ligonier Coal Company,	24,947

Burrell Coal Company,	90,853
Maher Coal and Coke Company,	46,462
McCreary Coke Company,	136,239
Blairsville Coke Company,	33,323
Ocean Coal Company,	125,369
Claridge Gas Coal Company,	201,544
Manor Gas Coal Company,	263,148
Spring Hill Gas Coal Company,	116,000
W. B. Skelly,	20,773
Penn Manor Shaft Company,	60,533
Carbon Coal Company,	249,667
Sewickley Gas Coal Company,	169,007
Arona Gas Coal Company,	266,951
Madison Gas Coal Company,	191,475
Pittsburg and Baltimore Coal Company,	30,000
Hempfield Coal Company,	208,079
Alexandria Coal Company,	275,415
Donohoe Coal and Coke Company,	151,382
Salem Coal Company,	83,948
Huron Coal Company,	14,724
Latrobe Coal Company,	248,791
H. C. Frick Coke Company,	116,091
Saxman Coal and Coke Company,	49,843
Superior Coal and Coke Company,	130,180
Derry Coal and Coke Company,	260,962
Bessemer Coke Company,	135,113
Millwood Coal and Coke Company,	107,067
Reese Hammond Fire Brick Company,	18,687
Bolivar Coal and Coke Company,	6,650
James Kerr,	3,985
Elkins Gas Coal Company,	160,368
American Steel Hoop Company,	71,509
Ray Coal Company,	32,784
Robert Smith,	46,637
Graff Coal Company,	31,086
Dixon Brothers,	4,388
Glenmore Coal and Coke Company,	6,600
Indiana Coal and Coke Company,	4,845
Mitchell-Watson Coal and Coke Company,	....
Bowman Coal Mining Company,	29.614
J. W. Smith Bros. & Co.,	45
Seaboard Coal Company,	3,758
Johnstown Coal Company,	9.753
Total,	8,222,731

The Total Production was Made up as Follows.

Shipped by railroad to market,	5,911,818
Sold at the mines for local use,	114,697
Consumed to generate steam,	164,226
Manufactured into coke,	2,031,990
Total,	8,222,731

Summary of Statistics, 1901.

Number of mines in the district,	73
Number of mines in operation during 1901,	69
Number of new mines opening up which produced no coal,	3
Number of tons of coal produced,	8,222,731
Number of tons shipped,	5,911,818
Number of tons used for steam at mines,	164,226
Number of tons sold to employes and others,	114,697
Number of tons used in manufacture of coke,	2,031,990
Number of tons produced by pick mining,	6,667,228
Number of tons produced by compressed air machines,	659,158
Number of tons produced by electrical machines,	896,345
Number of coke ovens,	4,190
Number of tons of coke produced,	1,498,520
Number of persons employed inside the mines,	8,934
Number of persons employed outside,	2,583
Number of horses and mules used in and about the mines,	961
Number of fatal accidents,	29
Number of tons of coal produced per fatal accident,	283,542.4
Number of non-fatal accidents,	82
Number of tons of coal produced per non-fatal accident,	100,277.2
Number of persons employed per fatal accident,	397.1
Number of persons employed per non-fatal accident,	140.4
Number of wives made widows by accidents,	19
Number of children orphaned by accidents,	49
Number of kegs of powder used,	5,330
Number of pounds of dynamite used,	13,840
Number of Cylindrical boilers in use,	62
Number of tubular boilers in use,	130
Number of steam locomotives,	13
Number of compressed air locomotives,	3

Number of electric motors.	9
Number of steam engines of all classes.	172
Number of pumps delivering water to surface.	77
Number of mining machines in use.	121
Number of electric dynamos.	17
Number of air compressors.	21
Number of new mines opened.	9
Number of old mines abandoned.	1

TABLE A—Showing the total tonnage, number of lives lost, tons of coal produced per life lost and person injured, total number of employes and the number of employes per life lost and person injured and the average number of tons of coal produced per employe.

Name of Companies.	Total number of tons of coal produced.	Number of lives lost.	Number of tons of coal produced per life lost.	Number of persons seriously injured.	Number of tons of coal produced per person seriously injured.	Total number of persons employed.	Number of persons employed per life lost.	Number of employes per person injured.	Average number of tons of coal produced per employe.
Westmoreland Coal Company,	1,347,410	7	192,487.1	7	192,487.1	1,496	213.7	213.7	900.6
Penn Gas Coal Company,	465,155	...	...	1	465,155	775	...	775	600.2
Greensburg Coal Company,	283,601	...	...	4	70,900.2	293	...	73.2	967.9
Jamison Coal and Coke Company,	381,580	1	381,580	13	29,352.3	619	619	47.6	616.4
Loyalhanna Coal and Coke Company,	344,568	1	344,568	2	172,284	606	606	303	568.6
Hostetter Connellsville Coke Company,	538,000	2	269,000	8	67,250	837	418.5	104.6	642.7
American Coke Company,	532,842	2	266,421	3	177,614	742	371	247.3	718.1
Atlantic Crusher Coke Company,	90,980	1	90,980	...	...	144	144	...	631.8
The Ligonier Coal Company,	24,947	...	...	...	...	29	...	...	860.2
Burrell Coal Company,	90,853	...	...	1	90,853	84	...	84	1,081.6
Maher Coal and Coke Company,	46,462	...	...	...	...	51	...	...	911
McCreary Coal Company,	136,239	2	68,119.5	2	68,119.5	264	132	132	516
Blairsville Coke Company,	33,323	...	...	...	...	24	...	...	1,388.4
Ocean Coal Company,	125,369	...	...	4	31,342.2	176	...	44	712.3
Claridge Gas Coal Company,	201,544	1	201,544	2	100,772	302	302	151	667.3
Manor Gas Coal Company,	263,148	...	...	2	131,574	334	...	167	787.9
Spring Hill Gas Coal Company,	116,000	1	116,000	1	116,000	126	126	126	920.6
W. B. Skelly,	20,773	...	...	1	20,773	45	...	45	461.6
Penn Manor Shaft Company,	60,533	1	60,533	...	...	107	107	...	565.7
Carbon Coal Company,	249,667	...	...	2	124,833.5	262	...	131	952.9
Sewickley Gas Coal Company,	169,007	1	169,007	5	33,801.4	269	269	53.8	628.3
Arona Gas Coal Company,	266,951	...	...	1	266,951	339	...	339	487.4
Madison Gas Coal Company,	191,475	...	...	1	191,475	218	...	218	878.3
Pittsburg and Baltimore Coal Company,	30,000	1	30,000	1	30,000	104	104	104	288.4
Hempfield Coal Company,	208,079	...	...	...	...	176	...	...	1,182.2
Alexandria Coal Company,	275,415	1	275,415	...	...	366	366	...	752.5
Donohoe Coal and Coke Company,	151,382	1	151,382	1	151,382	202	202	202	749.4
Salem Coal Company,	83,948	...	...	...	...	113	...	...	742.9
Huron Coal Company,	14,724	...	...	2	7,362	81	...	40.5	181.8
Latrobe Coal Company,	248,791	1	248,791	2	124,395.5	307	307	153.5	810.4
H. C. Frick Coke Company,	116,091	3	38,697	1	116,091	196	65.3	196	592.3
Saxman Coal and Coke Company,	49,843	...	...	...	...	131	...	...	380.4

Superior Coal and Coke Company,	130,180					140			929.8
Derry Coal and Coke Company,	260,962					325			802.9
Bessemer Coke Company,	135,113	1	135,113			299	299		451.8
Millwood Coal and Coke Company,	107,067	1	107,067	11	9,733.4	131	131	11.9	817.3
Reese, Hammond Fire Brick Company,	18,687			1	18,687	19		19	983.5
Bolivar Coal and Coke Company,	6,650					19			350
James Kerr,	3,985					23			173.2
Elkins Gas Coal Company,	160,368			1	160,368	218		218	735.6
American Steel Hoop Company,	71,509					199			359.3
Roy Coal Company,	32,784					37			886
Robert Smith,	46,637			2	23,318.5	60		30	777.3
Graff Coal Company,	31,086					40			777.1
Dixon Brothers,	4,388					25			175.5
Glenmore Coal and Coke Company,	6,600					12			550
Indiana Coal and Coke Company,	4,845					52			93.1
Mitchell-Watson Coal and Coke Company,*									
Bowman Coal Mining Company,	29,614					60			493.5
J. W. Smith Brothers & Company,	45					9			5
Seaboard Coal Company,	3,758					14			268.4
Johnstown Coal Company,	9,753					17			573.7
Totals and average,	8,222,731	29	283,542.4	82	100,277.2	11,517	397—	140.4	713.9

*In course of construction.

TABLE B—Classification of Accidents.

	Killed or fatally injured.	Injured.	Total.
By falls of coal,	3	9	12
By falls of slate,	11	29	40
By falls of coal and slate,	....	4	4
By falls of roof,	1	7	8
By cars,	12	21	33
By falling cage,	....	8	8
By machinery, general,	1	2	3
By miscellaneous causes, inside,	1	1	2
By miscellaneous causes, outside,	....	1	1
Total,	29	82	111

TABLE C—Occupations of Persons Killed and Injured.

	Killed or fatally injured.	Injured.	Total.
Miners,	15	60	75
Drivers,	3	5	8
Oilers,	1	....	1
Machine loaders,	3	10	13
Door boys,	1	....	1
Pumpers,	1	....	1
Roadmen,	2	1	3
Assistant mine boss,	1	....	1
Fire boss,	1	....	1
Cagers,	....	3	3
Tippleman,	....	2	2
Outside laborers,	1	1	2
Total,	29	82	111

TABLE D—Number Killed and Injured in Each Month.

	Killed or fatally injured.	Injured.	Total.
January,	3	4	7
February,	6	1	7
March,	2	6	8
April,	2	5	7
May,	1	13	14
June,	3	4	7
July,	3	2	5
August,	3	12	15
September,	....	12	12
October,	2	10	12
November,	2	3	5
December,	2	10	12
Total,	29	82	111

TABLE E—Nationalities of Persons Killed or Injured.

	Killed or fatally injured.	Injured.	Total.
Welsh,	1	1	2
English,	2	4	6
Scotch,	2	....	2
Irish,	2	....	2
Poles,	2	8	10
Slavs,	3	12	15
Austrians,	4	4	8
Americans,	5	21	26
Hungarians,	1	3	4
Italians,	5	22	27
Germans,	2	3	5
Russians,	....	3	3
Grinner,	....	1	1
Total,	29	82	111

TABLE G—Giving name of mine, kind of opening, method of ventilation, haulage, whether pick or machine mine, in the Second Bituminous District.

Names of Collieries.	Kind of Opening.	Method of Ventilation.	Haulage.	Pick or Machine.
Export,	Drift,	Fan,	Animals and rope,	Pick and machine.
Larimer,	Slope,	Fan,	Animals and rope,	Pick and machine.
Westmoreland,	Shaft,	Fan,	Animals and rope,	Pick and machine.
Coal Run,	Drift,	Furnace,	Animals,	Pick.
No. 1 Penn Gas,	Shaft,	Fan,	Animals and rope,	Pick.
No. 2 Penn Gas,	Shaft,	Fan,	Compressed air locomotives, and animals,	Pick and machine.
No. 5 Penn Gas,	Slope,	Fan,	Animals and rope,	Pick and machine.
Greensburg No. 1,	Slope,	Fan,	Animals and rope,	Pick.
Greensburg No. 2,	Slope,	Fan,	Animals and rope,	Pick.
Radebaugh,	Drift,	Natural,	Animals,	Pick.
Jamison No. 1,	Slope,	Fan,	Animals and rope,	Pick and machine.
Jamison No. 2,	Slope,	Fan,	Animals and rope,	Pick and machine.
Jamison No. 3,	Shaft,	Fan,	Animals,	Pick and machine.
Jamison No. 4,*	Shaft,			
Loyalhanna No. 1,	Shaft,	Fan,	Animals and rope,	Pick.
Loyalhanna No. 2,	Shaft,	Fan,	Animals,	Pick.
Pandora,	Shaft,	Fan,	Animals and electric motor,	Pick.
Hostetter,	Slope,	Fan,	Animals and rope,	Pick.
Whitney,	Slope,	Fan,	Animals and rope,	Pick.
Puritan or Baggaley,	Slope,	Fan,	Animals and rope,	Pick.
Dorothy,	Shaft,	Fan,	Animals,	Pick.
Atlantic No. 1,	Drift,	Natural,	Animals,	Pick.
Atlantic No. 2,	Slope,	Fan,	Animals and rope,	Pick.
S. H. Smith,	Drift,	Furnace,	Animals,	Pick.
Ligonier No. 2,†	Drift,			
Burrell No. 1,	Drift,	Furnace,	Animals,	Pick.
Burrell No. 2,	Drift,	Furnace,	Animals,	Pick.
Maher No. 2,	Drift,	Furnace,	Animals,	Pick.
Maher No. 3,	Drift,	Natural,	Animals,	Pick.
Graceton No. 1,	Drift,	Fan,	Animals,	Pick and machine.
Graceton No. 2,	Drift,	Fan,	Animals and rope,	Pick and machine.
Graff,	Drift,	Furnace,	Animals,	Pick.
Graff No. 2,*	Drift,			
Ocean No. 1,	Shaft,	Fan,	Animals,	Pick and machine.
Ocean No. 2,	Shaft,	Fan,	Animals and rope,	Pick and machine.
Claridge,	Drift,	Fan,	Animals and rope,	Pick.
Denmark,	Slope,	Fan,	Animals and rope,	Pick.
Spring Hill,	Drift,	Furnace,	Animals and steam locomotives,	Pick.
Elizabeth,	Drift,	Furnace,	Animals,	Pick.
Penn Manor,	Shaft,	Fan,	Animals,	Pick.
Carbon,	Slope,	Fan,	Animals, rope and compressed air locomotive,	Pick.

Sewickley,	Slope,	Fan,	Animals and rope,	Pick.
Arona,	Slope,	Fan,	Animals and rope,	Pick.
Madison,	Drift,	Furnace,	Animals,	Pick.
Baltimore No. 1,	Slope,	Fan,	Animals and rope,	Pick and machine.
Hempfield,	Slope,	Fan,	Animals and rope,	Pick.
Alexandria,	Drift with slope workings,	Fan,	Animals and rope,	Pick.
Donohoe,	Drift,	Fan,	Animals and electric motor,	Pick.
Salem,	Drift,	Fan,	Animals,	Pick and machine.
Huron,	Drift,	Furnace,	Animals,	Pick.
Latrobe,	Slope,	Fan,	Animals and rope,	Pick.
Monastery,	Slope,	Fan,	Animals and rope,	Pick.
M. Saxman,	Shaft,	Fan,	Animals,	Pick.
Superior No. 1,	Shaft,	Fan,	Animals,	Pick.
Derry shaft,	Shaft,	Fan,	Animals and electric motors,	Pick and machine.
Saint Clair,	Slope,	Fan,	Animals and rope,	Pick.
Millwood,	Shaft,	Fan,	Animals,	Pick.
Indiana,	Drift,	Natural,	Animals,	Pick.
Lockport,	Drift,	Furnace,	Animals,	Pick.
Lincoln,	Drift,	Furnace,	Animals,	Pick.
Pleasant Valley,	Drift,	Furnace,	Animals,	Pick.
Isabella,	Slope,	Fan,	Animals and rope,	Pick.
Ray,	Drift,	Natural,	Animals,	Pick.
Smith,	Drift,	Furnace,	Animals,	Pick.
Blacklick,	Drift,	Furnace,	Animals,	Pick.
Dixon,	Drift,	Natural,	Animals,	Pick.
Tearing Run,	Drift,	Natural,	Animals,	Pick.
Mitchell,	Drift,	Fan,	Animals,	Pick.
Mitchell-Watson No. 1,*	Drift,			
Bowman,	Drift,	Furnace,	Animals,	Pick.
Edri	Drift,			
Seaboard,	Shaft,	Exhaust steam.,	Animals,	Pick.
Cramer,	Drift,	Natural,	Animals,	Pick.

*In course of construction.
†Idle the entire year.

TABLE H—Giving name of mine, seam of coal worked, thickness of coal seam in inches mined, number of tons of machine mined coal, and number of machines in use in each mine, total number of machines in use and power used for operating them.

Name of Mine.	Seam of Coal Worked.	Thickness of coal seam in inches mined.	Number of tons of machine mined coal.	Type and Number of Machines in Use.						Totals.	Power Used.
				Sullivan.	Jeffrey.	Ingersoll.	Harrison.	Morgan-Gardner.	Goodman.		
Export,	F. or Pittsburg,	60	402,188	......	10	......	......	......	......	10	Electricity.
Larimer,	F. or Pittsburg,	48	322,976	......	6	......	......	......	......	6	Electricity.
Westmoreland,	F. or Pittsburg,	72	332,806	......	9	......	......	......	......	9	Compressed air.
Ocean Nos. 1 and 2,	F. or Pittsburg,	66	67,596	6	......	6	8	......	......	20	Compressed air.
No. 2 Penn Gas,	F. or Pittsburg,	72	86,256	......	4	......	......	......	......	4	Compressed air.
No. 5 Penn Gas,	F. or Pittsburg,	60	100,375	......	3	......	......	2	......	5	Electricity.
Derry,	F. or Pittsburg,	72	53,806	......	......	......	......	4	......	4	Electricity.
Baltimore No. 1,	F. or Pittsburg,	72	17,000	......	......	......	......	......	2	2	Electricity.
Graceton Nos. 1 and 2,	D. or Lower Freeport,	38	62,000	36	......	......	......	......	......	36	Compressed air.
Jamison No. 1,	F. or Pittsburg,	78	15,000	2	......	4	......	......	......	6	Compressed air.
Jamison No. 3,	F. or Pittsburg,	78	90,000	5	......	6	......	......	......	11	Compressed air.
Salem,	F. or Pittsburg,	72	5,500	1	......	7	......	......	......	8	Compressed air.
Totals,		......	1,555,503	50	32	23	8	6	2	121	

Number of machines operated by compressed air,	94
By electricity,	27
Totals,	121

TABLE—Giving number and size of fans and furnaces, cubic feet of air per minute in circulation, number of persons employed, cubic feet of air per minute for each person employed, number of splits of the air current and cubic feet of air per minute in circulation in splits.

Name of Mine.	Name of Operator.	Number of fans.	Size of fans in feet.	Number of furnaces.	Size of furnaces in feet.	Cubic feet of air per minute in circulation.	Number of persons employed in mine.	Cubic feet of air per minute for each person employed.	Number of splits of the air current.	Cubic feet of air per minute in circulation in splits.
Export,	Westmoreland Coal Company,	1	8x24			144,000	555	259.4	6	118,560
Larimer,	Westmoreland Coal Company,	1	9x20			160,800	453	354.9	10	91,750
Westmoreland shaft,	Westmoreland Coal Company,	1	10x24			169,120	340	497.4	6	91,840
Coal Run,	Penn Gas Coal Company,			1	6x8	20,000	86	232.5	1	20,000
No. 1 Penn Gas,	Penn Gas Coal Company,	1	6x18			39,200	165	237.6	1	39,200
No. 2 Penn Gas,	Penn Gas Coal Company,	1	6x16			92,400	299	309+	5	69,810
No. 5 Penn Gas,	Penn Gas Coal Company,	1	6x14			62,400	127	491.3	3	44,640
Greensburg No. 1,	Greensburg Coal Co.,	1	3½x12			54,000	79	683.5	1	54,000
Greensburg No. 2,	Greensburg Coal Co.,	1	4½x16			48,000	155	309+	4	30,600
Radebaugh,*	Greensburg Coal Co.,					7,280	22	330.9	1	7,280
Jamison No. 1,	Jameson Coal and Coke Company,	1	3½x12			37,960	261	278.7	1	37,960
Jamison No. 2,	Jameson Coal and Coke Company,	1	3x10			34,750			4	34,620
Jamison No. 3,	Jameson Coal and Coke Company,	1	4x12			39,000	146	267+	3	26,090
Jamison No. 4,†	Jameson Coal and Coke Company,									
Loyalhanna No. 1, Loyalhanna No. 2,	Loyalhanna Coal and Coke Company,	1	6x18			63,240	283	223.4	4	43,850
Pandora,	Loyalhanna Coal and Coke Company,	1	8x25			45,000	202	222.7	4	31,380
Hostetter,	Hostetter-Connellsville Coke Company,	1	4½x16			74,580	195	382.4	6	69,120
Whitney,	Hostetter-Connellsville Coke Company,	1	4½x16			69,800	193	361.6	4	65,120
Puritan or Baggaley,	American Coke Company,	1	6x20			108,640	280	388	3	62,000
Dorothy,	American Coke Company,	1	6x20			96,000	202	475.2	3	70,400
Atlantic No. 1,*	Atlantic Crushed Coke Company,					15,840	33	480	1	15,840
Atlantic No. 2,	Atlantic Crushed Coke Company,	1	4½x6			44,200	75	589.3	2	44,200
S. H. Smith,	The Ligonier Coal Company,			1	6x6	19,400	27	718.5	1	19,400
Ligonier No. 2,‡	The Ligonier Coal Company,									
Burrell No. 1,	Burrell Coal Company,			1	5x6	22,800	25	912	1	22,800
Burrell No. 2,	Burrell Coal Company,			1	5x6	14,500	51	284.3	1	14,500
Maher No. 2,‖	Maher Coal and Coke Company,						7			
Maher No. 3,*	Maher Coal and Coke Company,					10,080	40	252	1	10,080
Graceton No. 1,	McCreary Coke Company,	1	3½x9			18,900	48	392.7	1	18,900
Graceton No. 2,	McCreary Coke Company,	1	3½x11			22,600	130	173.8	2	22,600
Graff,	Blairsville Coke Company,			1	4x6	8,000	23	347.8	1	8,000

TABLE—Continued.

Name of Mine.	Name of Operator.	Number of fans.	Size of fans in feet.	Number of furnaces.	Size of furnaces in feet.	Cubic feet of air per minute in circulation.	Number of persons employed in mine.	minute for each person employed.	Number of splits of the air current.	Cubic feet of air per minute in circulation in splits.
Graff No. 2,†	Blairsville Coke Company,									
Ocean No. 1, Ocean No. 2,	Ocean Coal Company,	2	8x25 7x15			139,800	143	977.6	5	59,300
Claridge,	Claridge Gas Coal Company,	1	7x16			64,800	281	230.6	7	55,780
Denmark,	Manor Gas Coal Company,	1	5½x12			106,920	310	344.9	5	61,130
Spring Hill,	Spring Hill Gas Coal Company,			2	7x6 6x6	42,000	126	333.3	2	42,000
Elizabeth,	W. B. Skelly,			1	5x5	16,800	41	409.7	1	16,800
Penn Manor,	Penn Manor Shaft Company,	1	6x20			39,800	85	468.2	2	39,800
Carbon,	Carbon Coal Company,	1	5x11			68,120	212	321.3	5	49,800
Sewickley,	Sewickley Gas Coal Company,	1	8x25			108,000	227	475.7	6	90,260
Arona,	Arona Gas Coal Company,	1	6½x16			64,400	311	207+	5	42,040
Madison,	Madison Gas Coal Company,			1	6x12	26,000	202	128.7	3	21,420
Baltimore No. 1,	Pittsburg and Baltimore Coal Company,	1	8x12			34,820	104	334.8	1	34,820
Hempfield,	Hempfield Coal Company,	1	3½x12			54,000	148	364.8	2	41,000
Alexandria,	Alexandria Coal Co.,	2	6½x16 4 x15			101,800	285	357+	8	64,480
Donohoe,	Donohoe Coal and Coke Company,	1	5x14			61,800	114	454.3	3	39,940
Salem,	Salem Coal Company,	1	3x10			31,920	83	384.5	1	31,920
Huron,	Huron Coal Company,			1	3	12,000	69	196.7	1	12,000
Latrobe,	Latrobe Coal Company,	1	6x20			74,000	227	325.9	6	59,460
Monastery,	H. C. Frick Coke Company,	1	4x15			36,000	97	381.4	1	36,000
M. Saxman,	Saxman Coal and Coke Company,	1	3½x12			31,200	100	312	1	31,200
Superior No. 1,	Superior Coal and Coke Company,	1	3½x12			43,200	108	400	3	31,030
Derry shaft,	Derry Coal and Coke Company,	1	6x20			64,000	265	241.5	6	43,100
Saint Clair,	Bessemer Coke Company,	1	5½x18			38,500	153	251.6	3	31,560
Millwood,	Millwood Coal and Coke Company,	1	5x13½			56,100	107	524.2	2	47,220
Indiana,*	Reese-Hammond Fire Brick Company,					16,200	17	952.9	1	16,200
Lockport,	Bolivar Coal and Coke Company,			1	7x8	10,080	14	720	1	10,080
Lincoln,	James Kerr,			1	6x8	15,000	23	652.1	1	15,000
Pleasant Valley,	Elkins Gas Coal Company,			2	7½x12 6x10	61,300	202	303.4	6	49,970
Isabella,	American Steel Hoop Company,	1	7x12			55,000	112	491+	2	14,200
Ray,*	Ray Coal Company,					12,500	33	378.7	1	12,500

Smith,	Robert Smith,			1	5x6	22,600	57	396.4	1	22,600
Blacklick,	Graff Coal Company,			1	5x6	18,240	36	506.6	1	18,240
Dixon,*	Dixon Brothers,					10,800	24	450	1	10,800
Tearing Run,*	Glenmore Coal and Coke Company,					5,700	12	475	1	5,700
Mitchell,	Indiana Coal and Coke Company,	1	3x10			13,600	46	295.6	1	13,600
Mitchell-Watson No. 1,†.	Mitchell-Watson Coal and Coke Company,									
Bowman,	Bowman Coal Mining Company,			1	4x6	7,140	56	127.5	1	7,140
Edri,*	J. W. Smith Brothers and Company,						6			
Seaboard,	Seaboard Coal Company,						14			
Cramer,*	Johnstown Coal Company,					9,000	16	562.5	1	9,000
Total and average,		43	5.5x15.6	17	5.5x7+	50,234—	893.4	371.1	179	15,545.9

*Natural ventilation.
†In course of construction.
‡Idle the entire year.
||Abandoned during the year.
§Radiation by steam.
**No regular current established on last visit.

Examination of Applicants for Certificates of Competency as Mine Foreman.

The annual examination of applicants for certificates of competency as mine foreman was held in Fisher's Hall, Greensburg, January 2d, 3d and 4th, 1901.

The board of examiners was composed of C. B. Ross, Inspector; R. O. Thomas, superintendent, and William Severn, mine foreman.

Twenty-eight applicants appeared and were examined, and the following ten, having passed a satisfactory examination, received certificates.

First Grade.

David Condie, Cokeville, Westmoreland county.
William Bird, Herminie, Westmorelandl county.
James J. Brown, Whitney, Westmoreland county.
Edward Brennen, Export, Westmoreland county.
Jacob Wewalt, Scottdale, Westmoreland county.
Joseph Angus, Mt. Pleasant, Westmoreland county.
William McKusker, Mt. Pleasant, Westmoreland county.

Second Grade.

William D. Roberts, Blairsville, Indiana county.
John McClane, Whitney, Westmoreland county.
M. J. Patterson, Latrobe, Westmoreland county.

Names of Applicants.

Who have passed a successful examination and received certificates of competency as mine foreman, as shown by the records of the examining boards, from the passage of the act of May 15, 1893, relating to Bituminous coal mines, up to and including the year 1901.

First Grade.

James Eaton, James Henderson, John Higson, John Keck, William Hammer, Charles Severn, John Snedden, H. J. Simmons, William Muir, Peter Lowther, Morris Ramsey, John McDonald, James Duncan, George H. Blackburn, H. D. Penman, Thomas Easton, Edward E. Girod, James Charlesworth, William McKusker, John Patterson, James W. Eaton, Jasper Wilson, C. W. Hall, George Eustis, Thomas B. Brown, James McGuire, Daniel S. Miller, Edward R. Jones, George E. Loughner, A. J. McNally, Edward Franklin, David Condie, William Bird, James J. Brown, Edward Brennen, Jacob Dewalt, Joseph Angus.

Second Grade.

James Duncan, John F. Bell, Thomas Webber, Andrew Fulton, William D. Roberts, M. J. Patterson, James McKechan, David Condie, John McClane.

Commonwealth vs. John Youchman.	In the Court of Quarter Sessions of Westmoreland County, Pa. No. 102 Aug. Sessions, 1901. Charge—Violating mining laws. C. R. Ross, Inspector, prosecutor.

Information was made by me against John Youchman based upon the following facts, as recited in the information: That on the 14th day of June, 1901, the said John Youchman intentionally and carelessly took matches, pipe, tobacco and other smokers' articles in the coal mines of the American Coke Company, located at Baggaley Postoffice, Unity township, Westmoreland county, Pa., and carried the same beyond the station inside of said mine, inside of which locked safety lamps are used, whereby the lives, health and security of the miners in said mine were endangered, contrary to the acts of Assembly in such cases made and provided.

Information made upon facts received from Charles E. Porter, mine foreman.

A hearing was had before Jacob Hoffer, J. P., in the borough of Greensburg, and the defendant bound over to court. At the subsequent term of the quarter sessions court at No. 102 August Term, a bill of indictment was preferred, and August 28, 1901, a true bill was found against the defendant.

The case came on to be heard and on the 29th August, 1901, the jury returned a verdict that they find the defendant guilty and recommend him to the extreme mercy of the court.

Charles M. Henry, Foreman.

Motion for a new trial and in arrest of judgment was filed by the attorneys for the defendant, setting forth in substance two reasons: 1st. That the act of May 15, 1893, P. L. 52, was unconstitutional. 2d That the indictment was defective. Both of which reasons were overruled by the court, who said, inter alia: "The precise question is ruled in the case of the Commonwealth vs. Jones, 4 Pa. Superior Court, 362, in which it is held that the title of the act of May 15, 1893, P. L. 52 (the act under which this bill is drawn) meets all the constitutional demands as to sufficiency. The objections to its sufficiency are without foundation, etc."

After the court had overruled the motion for a new trial and in arrest of judgment, the defendant was called in for sentence, and directed on the 26th November, 1901, to pay the costs of prosecution, pay a fine of twenty-five dollars to the Commonwealth for use of the county and stand committed until sentence was complied with.

Descriptions of Fatal Accidents that Occurred During the Year.

William Stevenson was so seriously injured January 9, in Atlantic No. 2 mine, by being caught between a car and coal pillar, that death resulted in about one-half hour. The accident occurred on No. 1 "butt" entry of No. 1 face entry left.

Stevenson was employed as a driver and had brought a wagon from No. 10 room, which jumped the track going down the entry. He called some miners to put in on the track; they came and while they were engaged in so doing, Stevenson took his mule and went to No. 15 room for another wagon. On reaching the entry with this wagon it suddenly increased in speed. He applied the brake but it did not check the speed of the wagon. Knowing that the other wagon was off the track farther down the entry and thinking that a collision would certainly occur, in which his mule would be injured and possibly killed, he attempted to pass the car to unhook his mule for the purpose of turning it off into a room and saving it from injury. But just as he was passing the wagon it jumped the track and he was caught between it and the coal pillar, with the above result.

John Yapsick was so seriously injured January 9, in Penn-Manor mine, by a fall of coal that death resulted in six hours. Yapsick was mining out a small stump of coal, which had been left in the mining to act as a sprag, when the coal fell and crushed him.

Peter Kilday was instantly killed, January 14, by having been struck by a trip of loaded mine cars on the main haulage road, in the Sewickley mine. Kilday in company with two other roadmen, were returning to their work by way of the haulage road. On reaching a point about two hundred yards inside of the mine mouth they met the trip. Smith stepped off to the right side, Shotts jumped into a shelter hole on the left and Kilday attempted to follow Shotts but was not quick enough and was struck by the trip and dragged about one hundred yards before it could be stopped. He was found under the fourth wagon.

Villani Guiseppe was instantly killed on February 4, in the Millwood mine. A driver, started his mule into Guiseppe's room and called to him to hook the mule to the car and start it out. This he did while the driver was arranging his trip on the entry. On hearing the mule and wagon coming he went to the mouth of the room to take charge of it and was surprissed to find that Guiseppe had been run over. He had evidently been on the front end of the wagon, and it was supposed that his head struck the roof, which caused him to fall off in front of the wagon and it passed over him.

Patrick Hughes was instantly killed on February 18, in the Larimer mine, by a fall of slate. He was preparing to set a post under the slate, when it fell and crushed him.

Joseph Loughery was instantly killed on February 19, in the Alexandria mine. It is customary in this mine for the miners to run their loaded cars from face of rooms to the mouth near the entry, where the drivers got them. In this case Loughery had run his wagon down and it ran out too far to allow the trip to pass. He was at front end of wagon pushing to back and it is supposed that he thought he had it back far enough. He started back into his room and just as he was passing between the wagon and coal pillar a driver came along with his trip, which struck the corner of Loughery's wagon, throwing it from the track and crushing Loughery against the coal pillar.

Mathias Ansity and Joseph Epovich were instantly killed February 26, by a fall of slate, while at work in No. 3 entry in the Dorothy mine. The accident occurred on the night turn, shortly after they had loaded their first car. They were new men at this mine, having just commenced work on the night turn.

George Uhas was so seriously injured February 27, by being caught betwen a trip of loaded mine cars and coal pillar, in the Westmoreland shaft mine, that death resulted the following day. Uhas was on his way out of the mine and had kept the traveling way until he reached No. 41 entry. Here he left the traveling way and proceeded to travel on the main haulage road, which is against the rules of this mine. He had gone only a short distance when he was overtaken by a trip of loaded cars, with the result as above stated. A violation of the rules of the mine on his part cost him his life.

George Lindsay was instantly killed on the morning of March 15, about six o'clock, by a fall of "horseback" slate in the Jamison No. 1 mine. The accident occurred at the face of No. 5 face entry right, where Lindsay was at work.

Joseph Georsa was instantly killed on March 16, by a fall of slate in room No. 15 off No. 12 entry west in the Larimer mine.

Andrew Collissa, a door boy in Graceton No. 2 mine, was instantly killed April 2, by being struck by a runaway trip of mine cars.

John Heckman was fatally injured April 19, while at work in the Monastery mine, by a fall of slate; death resulted in five hours. The accident occurred in pillar workings, where he was drawing timber.

George Collissa was injured May 31, by a fall of slate at face of entry in Graceton No. 2 mine. He was operating a mining machine at the time. The injury proved fatal June 15.

Frank Chicone was instantly killed June 1, by a fall of coal at face of room in the Donohue mine. He was undermining the coal at the time and a failure on his part to sprag it as required by the mining law, was the cause of the accident.

George Weightman was instantly killed June 3, by being run over by a trip of mine cars in the Claridge mine.

Tim Hoolihan was fatally injured June 24, by being struck by a trip of loaded mine cars. The accident occurred in the Larimer mine on main haulage road. Death resulted while he was being taken out of the mine.

John Hudis was instantly killed July 1, while at work in Monastery mine, by a fall of slate at foot of slope.

Gottfried Eichner was seriously injured July 3, by a fall of roof, while at work in the Latrobe mine; death resulted on the 24th inst.

Samuel Smith an outside laborer, was instantly killed July 19, by being caught in the ventilating fan at the Baltimore No. 1 mine.

Antonia Serretto was instantly killed August 7, by a fall of coal. The accident occurred at face of No. 55 entry in the Westmoreland shaft mine.

William S. Hall was instantly killed August 7, by being struck by a trip of loaded mine cars. The accident occurred in the Monastery mine on the main haulage road.

M. C. O'Brien a fire boss in the Whitney mine, was so seriously injured August 24, by a fall of slate, that death resulted five hours after. He was making an examination of the slate, when it fell and crushed him.

Glen Woods was so seriously injured October 7, by being run over by a trip of mine cars that death resulted when he was being taken home. This accident occurred in Export mine on the main haulage road.

Alfred Guilim was instantly killed October 11, in Spring Hill mine, by a fall of slate at face of room in which he was working.

Joseph Lashko was so seriously injured November 25, by being caught between a wagon and coal pillar that death resulted some three days after. This accident occurred in the Whitney mine.

Mike Kranyak was so seriously injured November 26, while at work on the main haulage road in the St. Clair mine, by being run over by a trip of loaded mine cars, that death resulted on the following day.

John Mohar a driver in the Larimer mine, was so seriously injured December 11, by being kicked by a mule that death resulted some two days after.

Antonia Cacini was instantly killed December 27, by a fall of slate in the Pandora mine. Cacini had just fired a shot and was returning to fire another when the slate fell and crushed him.

Description of Mines and Mine Improvements.

Mines on and Near the Pittsburg Division of the Pennsylvania Railroad.

Spring Hill.—The general condition and ventilation has been fairly good during the year.

Larimer.—This mine was in good condition on each visit. On my last visit I measured 160,800 cubic feet of air per minute passing in at the inlet, which was well distributed around the workings.

Penn Gas Coal Run.—Ventilation and drainage in fair condition.

Penn Gas No. 1.—Was idle from April 25, to August 19, owing to the mine having been flooded by water, which entered through surface breaks during heavy rains. The general condition was favorable when visited.

Westmoreland Shaft.—Was in good condition on each visit, both as to ventilation and drainage. On my last visit I measured 169,120 cubic feet of air per minute passing out at the outlet.

Penn Gas No. 5.—This mine was in good condition on each visit, with plenty of air in circulation throughout the workings.

Radebaugh.—Was in favorable condition on each visit, except that the ventilation was not of the best.

Hempfield.—General condition, fair but on my last two visit the ventilating current was rather weak in parts of the workings.

Monastery.—The condition of this mine was satisfactory.

Latrobe.—The ventilation has been considerably improved during the year. Good volumes of air were measured near face of workings on my last visit.

Saxman.—Was found in good condition on each visit. Twenty new coke ovens were erected during the year.

Loyalhanna Nos. 1 and 2.—The ventilating current at the face of a part of the workings was rather weak at the time of my first two visits. I found it considerably improved on my last visit, December 14.

A new ventilating fan of the Brazil type, eighteen feet in diameter, was installed at the No. 2 mine.

Pandora.—The condition of this mine was fairly good on each visit, except the last, when I found the ventilating current rather weak at the face of part of the workings.

Superior No. 1.—Was in good condition, both as to ventilation and drainage.

Derry Shaft.—In reasonably good condition on each visit, except that the ventilation in a portion of the workings, was unsatisfactory.

Atlantic No. 1.—Operations are still confined to the extraction of pillars and entry stumps. Its condition was fairly good, considering the difficulties encountered in such work.

Atlantic No. 2.—Was in good condition as to ventilation and drainage on each visit. Good currents of air were measured at face of workings.

Saint Clair.—Condition favorable. The ventilating furnace, which for years had produced the ventilation for this mine, has been abandoned and a new fan of the Brazil type, eighteen feet in diameter, installed, which has improved the ventilation. A new opening has been made, which gives a more direct route for haulage. This improvement, and a new tipple which has ben erected, greatly facilitates the handling of coal.

Ligonier No. 2.—Idle the entire year.

Millwood.—The general condition has been fairly good during the year.

Lockport.—Was in favorable condition at each visit.

Mines on and near the Turtle Creek Branch of the Pennsylvania Railroad.

Export.—Is a large mine, the underground workings of which are very extensive. The general condition of the mine was found to be good. A new fan of the Guibal type, twenty-four feet in diameter and eight feet wide, was installed during the year, which has greatly improved the ventilation.

Elizabeth.—On my first two visits I found the ventilation defective, as it was being produced by natural means. At my last visit I found it improved by the erection of a temporary furnace which was intended to answer the purpose until a permanent one could be erected.

Pleasant Valley.—The general condition has been good during the year.

Penn Gas No. 2.—Located on the Youghiogheny branch of the Pennsylvania Railroad. The workings are very extensive. The new dip workings, which are principally entry work, give off considerable explosive gas and are worked with locked safety lamps. The coal is brought down by blasting and great care must be exercised in order to prevent its taking fire. Oftentimes the flame from a shot ignites the gas escaping from and through the coal. These fires are extinguished by the persons who fire the shots and who are employed specially for that purpose. The drainage was good and the ventilation has been improved by the erection of a new ventilating fan of the Capell type; the diameter of the fan is sixteen feet, width six feet, with double inlet, and is so constructed that the air current can be reversed at any time it is desired.

Mines on and Near the Manor Branch of the Pennsylvania Railroad.

Claridge.—In fairly good condition on each visit during the year.

Denmark.—In fair condition, both as to ventilation and drainage.

Penn Manor.—The general condition of this mine was fairly good.

Greensburg No. 1.—Located on South West Branch of the Pennsylvania Railroad near Huff Station. The ventilation was good, drainage fair.

Mines on and Near the Hempfield Branch of the South West Pennsylvania Railroad.

Seaboard.—Is a new shaft opening to the Pittsburg seam.

Greensburg No. 2.—Was in fairly good condition on each visit. The mine had been ventilated by a Murphy fan six feet in diameter. This, however, has been replaced by one of the Guibal type, by which the ventilation has been considerably improved.

Carbon.—Was in good condition, except that the ventilation, on my last visit was rather weak at the face of part of the workings.

Arona.—In fair condition. A new ventilating fan of the Guibal type, is being installed.

Sewickley.—Its condition has been fairly good. The ventilation has been improved by the installation of a new ventilating fan of the Guibal type.

Madison.—Was in good condition on each visit.

Baltimore No. 1.—In good condition on each visit.

Ocean Nos. 1 and 2.—Was in good condition on each visit. Smoke was discovered coming up the No. 1 shaft, Sunday afternoon, August 25. An examination was made by the mine officials, and fire was discovered in No. 30 entry off lower north main entries. A shot had been fired the day previous about 2 o'clock P. M., in this entry and the usual examination was made to see whether or not any gas feeders were burning, but none were seen. It seems, however, that a small feeder was burning under the coal unnoticed, as the fire started at the face of the entry. The officials at once commenced to fight the fire, but it had gained considerable headway and could not be checked. They kept up the battle during the night but in the morning they were compelled to retreat as the fire, was traveling at a rapid rate down the north main entrance.

I arrived at the mine on August 26, about noon, and consultation was held with the mine officials and it was decided to seal up the shafts and flood the burning section of the mine. This was done successfully, for the reason that this section of the mine lay to the dip. A drill hole to the surface, through which water had been pumped from the mine, was used to carry the water from the surface. It was connected by pipes to the pumps placed at a creek on the surface near the drill hole. The water thus conducted to the mine, in connection with water which accumulated there, soon extinguished the fire, and operations in other parts of the mine were resumed September 14.

I visited the mine October 28, and found that the water had been pumped out, and that no fire could be found. The roof of the entries for a considerable distance, where the fire had traveled, had fallen, and the sides of the coal pillars in many places were coked to the depth of from three to six inches. The work of cleaning up these entries had already been begun and was progressing rapidly. The general condition of the mine was good at the time of my other visits.

Mines on and Near the Alexandria Branch of the Pennsylvania Railroad.

Jamison Nos. 1 and 2.—Were in fairly good condition throughout the year. Explosive gas was discovered in No. 2 mine, December 16.

Jamison No. 3.—Was in favorable condition on each visit.

Jamison No. 4.—Is a new shaft just being opened to the Pittsburg seam.

Alexandria.—Was in fairly good condition. A new air and pumping shaft has been sunk to a depth of 150 feet and an additional ventilating fan of the Guibal type, has been installed. This has greatly improved the ventilation in the lower or dip workings.

Donohoe.—Was in good condition generally. An electric haulage of the combined third and Traction rail systems was installed, and is giving satisfaction.

Salem.—The general condition of this mine has been fairly good. The ventilation has been improved by the erection of a ventilating fan of the Stein type.

Huron.—Is a new drift opening in the Pittsburg seam, and when visited was in a favorable condition. A tipple of the latest improved type has been erected.

Mines on and Near the Unity Branch of the Pennsylvania Railroad.

Dorothy.—A disastrous fire occurred in this mine, Sunday, April 28, which resulted in the destruction of the shaft timbers, head frame, coal bins, engine and boiler houses, and the loss of twenty-three head of stock which were in the mine at the time.

The fire originated in the pump house, located about twenty feet away from the shaft bottom. Careful inquiry failed to reveal the cause of the fire. The mine was worked with open lights and there is no doubt that it was caused by one of them.

The mine had been working day and night, and the sump which was located under the cages had become filled to such an extent that it was found necessary to clean it.

A. J. McNally, the mine foreman, was in the mine and had charge of the work.

About 11 o'clock A. M., Mr. McNally, the mine foreman, and P. J. McNally, the day pumper, went to dinner, leaving the other men in the mine. They had not been out more than a half hour when—McNally heard the whistle blow. This attracted his attention and he immediately returned to the shaft and found smoke issuing therefrom. He at once descended the shaft and with the assistance of the others began the battle with the flames, which soon spread to the stables. The water supply was somewhat limited and they were unable to overcome the flames and were compelled to retreat by way of the air shaft. The flames at once ascended the shaft, setting fire to the head frame and coal bins, and spread to the engine and boiler houses. Every effort was made to save the buildings but the water supply was not sufficient.

About 3.30 P. M., the head frame and coal bins, containing about thirty tons of coal, fell, a mass of ruins. A considerable portion of the coal went down the shaft, which increased the flames below.

The air shaft was closed up in order to save it and cut off the air from the fire. On the following day, a consultation was held by the officials and it was decided to flood the mine, and as soon as the debris around the burning shaft was removed it was sealed up. Three boilers and six pumps were placed at the Loyalhanna Creek, which is about sixteen hundred feet away from the shafts, two steam lines were laid from the boilers near the shaft to the pumps at the creek, and as the three boilers would not make sufficient steam to operate all the pumps, a six and a ten inch pipe line were laid to each shaft and the pumps commenced pumping water into the mine. It required only four days to do this work. On May 3, the pumps were stopped and the burning shaft, having been considerably cooled off, was opened. The ventilating fan was started and a party descended the air shaft and commenced to fight the fire. This was kept up during the night and a part of the following day. At one time it was thought the attempt would be successful, but owing to the entries near the shaft caving in, which cut off the air current and allowed the smoke from the fire to spread in the direction of the air shaft, those engaged in fighting the fire were compelled to retreat, and the shafts were again sealed up and the pumps started. Again on May 9, the shafts were opened, the pumps stopped, and another attempt was made to fight the fire, but without success.

The shafts were again closed, the pumps put in operation and kept running until the water raised in the shaft about forty feet. This required about six weeks. The water was allowed to stand a short time in the shaft, after which a temporary head frame, which had been erected, was put in use and pumps lowered down the shaft and work was commenced to remove the water from the mine, which required about sixty days.

It was found necessary to retimber the shaft the entire depth. The excessive heat from the fire caused the entries to cave in for some distance from the shaft bottom, and in many places the sides of the coal pillars were coked to a depth of eighteen inches.

These entries have been cleared up and secured by timber and masonry where necessary. On the side of the shaft where the loaded wagons are handled, a solid arch of masonry, 340 feet long and fourteen feet high, has been built, and on the side where the empty wagons are handled, one 100 feet long and fourteen feet high has been built.

The mine resumed operations about the middle of September, and locked safety lamps have been used since the fire.

The officials deserve great credit for the manner in which the work was performed, from the fact that not a single accident occurred.

The mine was found in good condition throughout when visited.

Puritan.—Has been in good condition, both in regard to ventilation and drainage.

Hostetter and Whitney.—Were in good condition, both as to ventilation and drainage.

S. H. Smith.—Located on the Ligonier Valley Railroad, near Latrobe, has been in favorable condition. This mine is being rapidly exhausted.

Mines on and Near the Indiana Branch of the Western Pennsylvania Division of the Pennsylvania Railroad.

Isabella.—Was in fairly good condition.

Burrell Nos. 1 and 2.—Was in good condition.

Graff.—The condition of this mine was favorable on each visit.

Maher No. 2.—Worked out and abandoned April 19.

Maher No. 3.—The condition of this mine has been fairly good.

Smith.—Was in favorable condition on each visit. The coal near the ventilating furnace was discovered to be on fire October 22. Prompt action soon extinguished it.

Dixon.—Is a new drift opening in the Pittsburg seam and was in favorable condition when visited.

Blacklick.—Was in favorable condition. The ventilation has been improved by the erection of a ventilating furnace.

Mitchell. The condition of this mine has been reasonably good on each visit.

Graceton Nos. 1 and 2.—Was in fairly good condition on each visit, both in regard to ventilation and drainage.

Tearing Run.—Is a drift opening into the Lower Freeport seam and has been in operation several years, but did not employ a sufficient number of persons to come under the law, until the present year. It was in favorable condition when visited.

Mines on and Near the Bolivar Branch of the Pennsylvania Railroad.

Ray.—The general condition of this mine was favorable during the year.

Graff No. 2.—Is a drift into the Upper Freeport seam, just being opened.

Indiana.—Was in reasonably good condition during the year.

Lincoln.—This is a drift opening in the Lower Freeport seam and has been in operation several years, but did not employ a sufficient number of persons inside to come under the law until the present year. It was in favorable condition on each visit.

Cramer.—Was in favorable condition on each visit.

Mines on and Near the Western Pennsylvania Division of the Pennsylvania Railroad.

Mitchell-Watson No. 1.—Is a new drift opening into the Upper Freeport seam and is incomplete.

Bowman.—Was in favorable condition when visited.

Edri.—Is a new drift opening into the Pittsburg seam and is unfinished.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Second Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Westmoreland Coal Co.						
Export,	Westmoreland,	Walter Leisenring,	Irwin,	T. D. Parfitt,	Export,	Pennsylvania Railroad.
Larimer,	Westmoreland,	Walter Leisenring,	Irwin,	Leonard Colerick,	Irwin,	Pennsylvania Railroad.
Westmoreland shaft,	Westmoreland,	Walter Leisenring,	Irwin,	J. U. Fisher,	Irwin,	Pennsylvania Railroad.
Penn Gas Coal Co.						
Coal Run,	Westmoreland,			T. Frank Wolf,	Irwin,	Pennsylvania Railroad.
No. 1 Penn Gas,	Westmoreland,			T. Frank Wolf,	Irwin,	Pennsylvania Railroad.
No. 2, Penn Gas,	Westmoreland,			T. Frank Wolf,	Irwin,	Pennsylvania Railroad.
No. 5 Penn Gas,	Westmoreland,			T. Frank Wolf,	Irwin,	Pennsylvania Railroad.
Greensburg Coal Co.						
Greensburg No. 1,	Westmoreland,	A. D. Harman,	Greensburg,	Henry Welty,	Greensburg,	S. W. P. R. R.
Greensburg No. 2,	Westmoreland,	A. D. Harman,	Greensburg,	Harry Null,	Greensburg,	S. W. P. R. R.
Radebaugh,	Westmoreland,	A. D. Harman,	Greensburg,	A. D. Harman,	Greensburg,	Pennsylvania Railroad.
Jamison Coal and Coke Co.						
Jamison No. 1,	Westmoreland,	T. S. Jamison,	Greensburg,	R. H. Jamison,	Greensburg,	Pennsylvania Railroad.
Jamison No. 2,	Westmoreland,	T. S. Jamison,	Greensburg,	R. H. Jamison,	Greensburg,	Pennsylvania Railroad.
Jamison No. 3,	Westmoreland,	T. S. Jamison,	Greensburg,	Thos. S. Jamison,	Greensburg,	Pennsylvania Railroad.
Jamison No. 4,	Westmoreland,	T. S. Jamison,	Greensburg,	Thos. S. Jamison,	Greensburg,	Pennsylvania Railroad.
Loyalhanna Coal & Coke Co.						
Loyalhanna No. 1,	Westmoreland,	C. C. Watt,	1301 L. T. Bdg., Phila.,	Wm. Leckie,	Loyalhanna,	Pennsylvania Railroad.
Loyalhanna No. 2,	Westmoreland,	C. C. Watt,	1301 L. T. Bdg., Phila.,	Wm. Leckie,	Loyalhanna,	Pennsylvania Railroad.
Pandora,	Westmoreland,	C. C. Watt,	1301 L. T. Bdg., Phila.,	Wm. Leckie,	Loyalhanna,	Pennsylvania Railroad.
Hostetter-Connellsville Coke Co.						
Hostetter,	Westmoreland,	J. R. Marshall,	Whitney,	J. R. Marshall,	Whitney,	Pennsylvania Railroad.
Whitney,	Westmoreland,	J. R. Marshall,	Whitney,	J. R. Marshall,	Whitney,	Pennsylvania Railroad.
American Coke Co.						
Puritan or Baggaley,	Westmoreland,	O. W. Kennedy,	Scottdale,	James Dumphy,	Boggaley,	Pennsylvania Railroad.
Dorothy,	Westmoreland,	O. W. Kennedy,	Scottdale,	A. F. Downing,	Latrobe,	Pennsylvania Railroad.
Atlantic Crushed Coke Co.						
Atlantic No. 1,	Westmoreland,			H. C. Burket,	Greensburg,	Pennsylvania Railroad.
Atlantic No. 2,	Westmoreland,			H. C. Burket,	Greensburg,	Pennsylvania Railroad.

The Ligonier Coal Co.						
S. H. Smith,	Westmoreland,	John McFadyen,	Latrobe,	Daniel Craig,	Latrobe,	Ligonier Valley R. R.
Ligonier No. 2,	Westmoreland.					
Burrell Coal Co.						
Burrell No. 1,	Indiana,			Thomas Maher,	Blairsville,	Pennsylvania Railroad.
Burrell No. 2,	Indiana,			Thomas Maher,	Blairsville,	Pennsylvania Railroad.
Maher Coal and Coke Co.						
Maher No. 2,	Indiana,			Thomas Maher,	Blairsville,	Pennsylvania Railroad.
Maher No. 3,	Westmoreland,			Thomas Maher,	Blairsville,	Pennsylvania Railroad.
McCreary Coke Co.						
Graceton No. 1,	Indiana,			Everhart Bierer,	Graceton,	Pennsylvania Railroad.
Graceton No. 2,	Indiana,			Everhart Bierer,	Graceton,	Pennsylvania Railroad.
Blairsville Coke Co.						
Graff,	Indiana,			W. P. Graff,	Blairsville,	Pennsylvania Railroad.
Graff No. 2,	Indiana,			W. P. Graff,	Blairsville,	Pennsylvania Railroad.
Ocean Coal Co.						
Ocean No. 1,	Westmoreland,	Thomas Fisher,	Philadelphia,	F. I. Kimball,	Herminie,	S. W. P. R. R.
Ocean No. 2,	Westmoreland,	Thomas Fisher,	Philadelphia,	F. I. Kimball,	Herminie,	S. W. P. R. R.
Claridge Gas Coal Co.						
Claridge,	Westmoreland,	J. Howard Patton,	Greensburg,			Pennsylvania Railroad.
Manor Gas Coal Co.						
Denmark,	Westmoreland,	A. P. Cameron,	Claridge,	A. P. Cameron,	Claridge,	Pennsylvania Railroad.
Spring Hill Gas Coal Co.						
Spring Hill,	Allegheny,	W. W. Dempster,	213 6th ave., Pittsburg,	W. W. Dempster,	213 6th av., Pgh.,	Pennsylvania Railroad.
W. B. Skelly.						
Elizabeth,	Westmoreland,			W. B. Skelly,	Export,	Pennsylvania Railroad.
Penn Manor Shaft Co.						
Penn Manor,	Westmoreland,	Jno. H. Friend,	Pittsburg,	Samuel Ferguson,	Harrison City,	Pennsylvania Railroad.
Carbon Coal Co.						
Carbon,	Westmoreland,	A. D. Harman,	Greensburg,	J. D. Wentling,	Greensburg,	S. W. P. R. R.
Sewickley Gas Coal Co.						
Sewickley,	Westmoreland,	H. F. Bovard,	Greensburg,	H. F. Bovard,	Darragh,	S. W. P. R. R.
Arona Gas Coal Co.						
Arona,	Westmoreland,	H. F. Bovard,	Greensburg,	H. F. Bovard,	Darragh,	S. W. P. R. R.
Madison Gas Coal Co.						
Madison,	Westmoreland,	H. F. Bovard,	Greensburg,	H. F. Bovard,	Darragh,	S. W. P. R. R.
Pittsburg and Baltimore Coal Co.						
Baltimore No. 1,	Westmoreland,	E. M. Steck,	Park Bldg., Pittsburg,	W. L. Coulson,	Adamsburg,	S. W. P. R. R.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Hempfield Coal Co. Hempfield,	Westmoreland,	A. D. Harman,	Greensburg,	A. O. Jones,	Greensburg,	Pennsylvania Railroad.
Alexandria Coal Co. Alexandria,	Westmoreland,			D. D. Munroe,	Alexandria,	Pennsylvania Railroad.
Donohoe Coal and Coke Co. Donohoe,	Westmoreland,	Jno. P. Donohoe,	Greensburg,	Jno. P. Donohoe,	Greensburg,	Pennsylvania Railroad.
Salem Coal Co. Salem,	Westmoreland,	A. D. Harman,	Greensburg,	Alex. Coulter,	New Alexandria,	Pennsylvania Railroad.
Huron Coal Co. Huron,	Westmoreland,	J. H. Patton,	Greensburg,	H. C. Patton,	Greensburg,	Pennsylvania Railroad.
Latrobe Coal Co. Latrobe,	Westmoreland,	John Lloyd,	26 S. 15th St., Phila.,	D. W. Jones,	Latrobe,	Pennsylvania Railroad.
H. C. Frick Coke Co. Monastery,	Westmoreland,	O. W. Kennedy,	Scottdale,	A. F. Downing,	Latrobe,	Pennsylvania Railroad.
Saxman Coal and Coke Co. M. Saxman,	Westmoreland,	M. W. Saxman,	Latrobe,			Pennsylvania Railroad.
Superior Coal and Coke Co. Superior No. 1,	Westmoreland,	M. W. Saxman,	Latrobe,			Pennsylvania Railroad.
Derry Coal and Coke Co. Derry shaft,	Westmoreland,			E. F. Saxman,	Latrobe,	Pennsylvania Railroad.
Bessemer Coke Co. Saint Clair,	Westmoreland,	R. L. Martin,	712 Lewis Block, Pgh.,	Peter Lowther,	Bradenville,	Pennsylvania Railroad.
Millwood Coal and Coke Co. Millwood,	Westmoreland,	E. B. Kimmell,	Millwood,	E. B. Kimmell,	Millwood,	Pennsylvania Railroad.
Reese-Hammond Fire Brick Co. Indiana,	Indiana,			Robert Binnie,	Bolivar,	Pennsylvania Railroad.
Bolivar Coal and Coke Co. Lockport,	Westmoreland,	Geo. H. Anderson,	419 Wood St., Pittsb'g,	Jno. McHail,	Bolivar,	Pennsylvania Railroad.

James Kerr, Lincoln,	Indiana,	James Kerr,	11 B'dway, N. Y. City,	Lawson Blinkinsopp,	Lockport,	Pennsylvania Railroad.
Elkins Gas Coal Co. Pleasant Valley,	Westmoreland,			J. H. Powell,	Haser,	Pennsylvania Railroad.
American Steel Hoop Co. Isabella,	Westmoreland,	O. W. Kennedy,	Scottdale,	J. M. Gallagher,	Blairsville,	Pennsylvania Railroad.
Ray Coal Co. Ray,	Indiana,			Thomas Maher,	Blairsville,	Pennsylvania Railroad.
Robert Smith. Smith,	Indiana,			Roy Girard,	Blairsville,	Pennsylvania Railroad.
Graff Coal Co. Blacklick,	Indiana,			F. M. Graff,	Blairsville,	Pennsylvania Railroad.
Dixon Brothers. Dixon,	Indiana,	G. W. Dixon,	Blairsville,			Pennsylvania Railroad.
Glenmore Coal and Coke Co. Tearing Run,	Indiana,			J. M. Guthrie,	Indiana,	Pennsylvania Railroad.
Indiana Coal and Coke Co. Mitchell,	Indiana,			Harry McCreary,	Indiana,	Pennsylvania Railroad.
Mitchell-Watson Coal and Coke Co. Mitchell-Watson No. 1,	Indiana,			Thomas Maher,	Blairsville,	Pennsylvania Railroad.
Bowman Coal Mining Co. Bowman,	Indiana,			S. J. Robinson,	Saltsburg,	Pennsylvania Railroad.
J. W. Smith Bros. & Co. Edri,	Indiana,			James M. Johnston,	Nowrytown,	Pennsylvania Railroad.
Seaboard Coal Co. Seaboard,	Westmoreland,	W. A. Huff,	Greensburg,	Thomas L. Jones,	Greensburg,	S. W. P. R. R.
Johnstown Coal Co. Cramer,	Indiana,			H. C. Burket,	Greensburg,	Pennsylvania Railroad.

TABLE II—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Second Bituminous District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Westmoreland Coal Co.														
Export,	Westmoreland,	498,239	3,992	1,555	503.786	......	......	242	617	1	1	15	......	38
Larimer,	Westmoreland,	451,358	3,946	2,559	457,863	......	......	258	496	4	3	12	500	31
Westmoreland shaft,	Westmoreland,	371,301	12,237	2,223	385,761	......	......	255	383	2	3	15	1,200	31
Total,	......	1,320,898	20,175	6,337	1,347.410	......	......	755	1,496	7	7	42	1,700	100
Penn Gas Coal Co.														
Coal Run,	Westmoreland,	57,298	80	116	57,494	......	......	146	98	......	......	......	......	7
No. 1, Penn Gas,	Westmoreland,	83,051	5,976	1,964	90,991	......	......	150	185	......	......	......	......	22
No. 2, Penn Gas,	Westmoreland,	182,263	9,494	3,920	195,677	......	......	235	350	......	1	......	......	28
No. 5 Penn Gas,	Westmoreland,	120,533	......	460	120,993	......	......	224	142	......	......	......	......	12
Total,	......	443,145	15,550	6,460	465.155	......	......	775	775	......	1	......	......	69
Greensburg Coal Co.														
Greensburg No. 1,	Westmoreland,	97,029	2,070	5,686	104,785	......	10	241	96	......	2	......	......	16
Greensburg No. 2,	Westmoreland,	150,728	1,927	1,161	153,816	......	......	256¼	173	......	......	2	100	9
Radebaugh,	Westmoreland,	25,000	......	......	25,000	......	......	251	23	......	2	......	......	3
Total,	......	272,757	3,997	6,847	283,601	......	10	748¼	292	......	4	2	100	28
Jamison Coal and Coke Co.														
Jamison No. 1,	Westmoreland,	74,340	2,610	1,200	251,110	108,100	300	297	396	1	4	500	4,150	30
Jamison No. 2,	Westmoreland,	......	......	......	......	......	......	......	......	......	5	......	......	......
Jamison No. 3,	Westmoreland,	126,000	4,370	100	130,470	17,000	200	310	223	......	4	300	3,000	10
Jamison No. 4,*	Westmoreland,	......	......	......	......	......	......	......	......	......	......	......	......	......
Total,	......	200,346	6.980	1,300	381,580	125.100	500	607	619	1	13	800	7,150	40

Loyalhanna Coal and Coke Co.														
Loyalhanna No. 1,	Westmoreland,	116,754	1,832	1,243	147,917	15,863	240	179	330	......	1	....	50	25
Loyalhanna No. 2,	Westmoreland,	15,208	4,396	110	19,714	....	....	230	38	......	......	....	150	2
Pandora,	Westmoreland,	171,122	5,158	657	176,937	....	....	247	233	1	1	....	50	12
Total,	....	303,084	11,386	2,010	344,568	15,863	240	656	601	1	2	....	250	39
Hostetter-Connellsville Coke Co.														
Hostetter,	Westmoreland,	....	5,000	1,300	268,000	220,000	355	301	422	......	4	10	300	40
Whitney,	Westmoreland,	....	6,300	1,300	270,000	220,000	352	300	415	2	4	10	300	41
Total,	....	....	11,300	2,600	538,000	440,000	707	601	837	2	8	20	600	81
American Coke Co.														
Puritan or Baggaley,	Westmoreland,	72,018	4,603	1,026	410,482	221,800	400	298	437	......	3	....	100	40
Dorothy,	Westmoreland,	30,665	3,032	960	122,360	58,500	230	187	305	2	......	40	1,000	32
Total,	....	102,683	7,635	1,986	532,842	280,300	630	485	742	2	3	40	1,100	72
Atlantic Crushed Coke Co.														
Atlantic No. 1,	Westmoreland,	53,500	3,050	450	90,980	20,670	79	227	144	......	......	....	....	4
Atlantic No. 2,	Westmoreland,	....	....	....	....	....	....	....	....	1	......	....	....	8
Total,	....	53,500	3,050	450	90,980	20,670	79	227	144	1	......	....	....	12
The Ligonier Coal Co.														
S. H. Smith,	Westmoreland,	24,900	....	47	24,947	....	....	231½	29	......	......	....	....	2
Ligonier No. 2,†	Westmoreland,	....	....	....	....	....	....	....	....	......	......	....	....	....
Total,	....	24,900	....	47	24,947	....	....	231½	29	......	......	....	....	2
Burrell Coal Co.														
Burrell No. 1,	Indiana,	35,108	....	....	35,108	....	....	313	29	......	1	....	....	2
Burrell No. 2,	Indiana,	55,745	....	....	55,745	....	....	224	55	......	......	....	....	3
Total,	....	90,853	....	....	90,853	....	....	537	84	......	1	....	....	5
Maher Coal and Coke Co.														
Maher No. 2,‡	Indiana,	1,631	....	....	1,631	....	....	79	8	......	......	....	....	1
Maher No. 3,	Westmoreland,	44,831	....	....	44,831	....	....	260	43	......	......	....	....	3
Total,	....	46,462	....	....	46,462	....	....	339	51	......	......	....	....	4
McCreary Coke Co.														
Graceton No. 1,	Indiana,	....	1,723	611	32,950	18,751	48	98	67	......	......	50	150	13
Graceton No. 2,	Indiana,	....	4,415	319	103,289	60,875	150	305	197	2	2	150	50	7
Total,	....	....	6,138	930	136,239	79,626	198	403	264	2	2	200	200	20

Production, etc., of single collieries will be found in the Recapitulation.

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise,	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Blairsville Coke Co.														
Graff,	Indiana,	33,182	......	141	33,323	......	......	248	24	......	......	......	......	3
Graff No. 2,*	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......
Total,	......	33 182	......	141	33,323	......	......	248	24	......	......	......	......	3
Ocean Coal Co.														
Ocean No. 1,	Westmoreland,	106,323	9,759	25,924	118,674	......	......	226	168	......	4	......	......	23
Ocean No. 2,	Westmoreland,	4,623	2,047	25	6,695	......	......	28	8	......	......	......	......	3
Total,	......	110,946	11,806	25,949	125,369	......	......	254	176	......	4	......	......	26

Recapit ulation.

Westmoreland Coal Co.,	Westmoreland,	1,320,898	20,175	6,337	1,347,410	......	......	755	1,496	7	7	42	1,700	100
Penn Gas Coal Co.,	Westmoreland,	443,145	15,550	6,460	465,155	......	......	755	775	......	1	......	......	69
Greensburg Coal Co.,	Westmoreland,	272,757	3,997	6,847	283,601	......	10	748¼	293	......	4	2	100	28
Jamison Coal and Coke Co.,	Westmoreland,	200,340	6,980	1,300	381,580	125,100	500	607	619	1	13	800	7,150	40
Loyalhanna Coal and Coke Co.,	Westmoreland,	303,084	11,386	2,010	344,568	15,863	240	656	606	1	2	......	250	39
Hostetter-Connellsville Coke Co.,	Westmoreland,	......	11,300	2,600	538,000	440,000	707	601	837	2	8	20	600	81
American Coke Co.,	Westmoreland,	102,683	7,635	1,986	532,842	280,300	630	485	742	2	3	40	1,100	72
Atlantic Crushed Coke Co.,	Westmoreland,	53,500	3,050	450	90,980	20,670	79	227	144	1	......	......	......	12
The Ligonier Coal Co.,	Westmoreland,	24,900	......	47	24,947	......	......	231½	29	......	......	......	......	2
Burrell Coal Co.,	Indiana,	90,853	......	......	90,853	......	......	537	84	......	1	......	......	5
Maher Coal and Coke Co.,	Indiana,	46,462	......	......	46,462	......	......	339	51	......	......	......	......	4
McCreary Coke Co.,	Indiana,	......	6,138	930	136,239	79,626	198	408	264	2	2	200	200	20
Blairsville Coke Co.,	Indiana,	33,182	......	141	33,323	......	......	248	24	......	......	......	......	3

Ocean Coal Co., ...	Westmoreland,	110,946	11,806	25,949	125,369	....	....	254	176	......	4	....	....	26
Claridge Gas Coal Co., ...	Westmoreland,.	199,709	1,527	308	201,544	....	....	306	302	1	1	300	200	19
Manor Gas Coal Co., ...	Westmoreland,.	258,370	4,200	578	263,148	....	....	295	334	......	2	450	200	22
Spring Hill Gas Coal Co., ...	Allegheny,......	112,829	1,121	2,040	116,000	....	....	313	126	1	1	....	....	9
W. B. Skelly, ...	Westmoreland,.	20,121	....	652	20,773	....	....	185	45	......	1	....	....	2
Penn Manor Shaft Co., ...	Westmoreland,.	59,063	1,170	300	60,533	....	43	180	107	1	......	....	....	9
Carbon Coal Co., ...	Westmoreland,.	235,165	2,781	11,721	249,667	18,781	57	250 7-10	262	......	2	....	....	30
Sewickley Gas Coal Co., ...	Westmoreland,.	163,776	4,807	424	169,007	....	....	273	269	1	5	20	800	22
Arona Gas Coal Co., ...	Westmoreland,.	265,422	855	674	266,951	....	....	251	339	......	1	....	....	16
Madison Gas Coal Co., ...	Westmoreland,.	191,355	....	120	191,475	....	....	288	218	......	1	....	....	16
Pittsburg and Baltimore Coal Co.,	Westmoreland,.	27,780	1,720	500	30,000	....	....	172	104	1	1	150	400	7
Hempfield Coal Co., ...	Westmoreland,.	196,381	4,254	7,444	208,079	....	....	313	176	......	......	400	500	25
Alexandria Coal Co., ...	Westmoreland,.	161,058	6,157	1,125	275,415	67,036	204	294	366	1	......	2,400	....	35
Donohoe Coal and Coke Co.,.......	Westmoreland,.	76,284	3,510	575	151,382	44,383	180	229	202	1	1	....	....	13
Salem Coal Co., ...	Westmoreland,.	82,208	1,090	650	83,948	3,584	50	221	113	......	......	....	....	28
Huron Coal Co., ...	Westmoreland,.	14,724	....	....	14,724	....	....	253	81	......	2	....	....	4
Latrobe Coal Co., ...	Westmoreland,.	132,350	4,869	4,769	248,791	76,947	136	294	307	1	2	....	....	30
H. C. Frick Coke Co., ...	Westmoreland,.	95,233	8,693	532	116,091	7,755	208	236	196	3	1	2	50	20
Saxman Coal and Coke Co.,.......	Westmoreland,.	23,854	406	228	49,843	15,985	80	156	131	......	......	....	....	15
Superior Coal and Coke Co., ...	Westmoreland,.	79,295	913	213	130,180	35,250	71	294	140	......	......	....	....	12
Derry Coal and Coke Co.,..........	Westmoreland,.	68,409	5,142	1,197	260,962	124,690	224	288	325	......	......	....	....	16
Bessemer Coke Co., ...	Westmoreland,.	15,982	2,170	375	135,113	89,692	244	249	299	1	......	....	....	20
Millwood Coal and Coke Co., ...	Westmoreland,.	102,520	4,280	267	107,067	....	....	297	131	1	11	150	150	17
Reese-Hammond Fire Brick Co.,..	Indiana,.........	....	....	18,687	18,687	....	....	300	19	......	1	....	....	3
Bolivar Coal and Coke Co.,........	Westmoreland,.	4,000	20	60	6,650	1,500	53	179	19	......	......	65	30	2
James Kerr, ...	Indiana,.........	3,985	....	....	3,985	....	....	92	23	......	......	....	....	2
Elkins Gas Coal Co., ...	Westmoreland,.	159,226	524	618	160,368	....	....	199½	218	1	......	175	50	14
American Steel Hoop Co.,..........	Westmoreland,.	....	5,280	1,000	71,509	48,922	252	185	199	......	......	....	....	20
Ray Coal Co., ...	Indiana,.........	32,784	....	....	32,784	....	....	245	37	......	......	....	....	2
Robert Smith, ...	Indiana,.........	46,000	....	637	46,637	....	....	263	60	......	2	....	....	10
Graff Coal Co., ...	Indiana,.........	31,086	....	....	31,086	....	....	240	40	......	......	....	....	3
Dixon Brothers, ...	Indiana,.........	4,348	....	40	4,388	....	....	77	25	......	......	....	....	2
Glenmore Coal and Coke Co.,§.....	Indiana,.........	6,600	....	....	6,600	....	....	155	12	......	......	....	....	2
Indiana Coal and Coke Co., ...	Indiana,.........	347	....	250	4,845	2,436	24	155	52	......	......	10	....	4
Mitchell-Watson Coal & Coke Co.,*	Indiana,.........	....	....	....	....	....	....	....	....	......	......	....	....	....
Bowman Coal Mining Co., ...	Indiana,.........	29,433	....	181	29,614	....	....	282	60	......	......	79	10	5
J. W. Smith Bros. & Co., ...	Indiana,.........	....	....	45	45	....	....	42	9	......	......	....	....	1
Seaboard Coal Co., ...	Westmoreland,.	....	720	3,038	3,758	....	....	120	14	......	......	....	100	1
Johnstown Coal Co., ...	Indiana,.........	9,361	....	392	9,753	....	....	212	17	......	......	25	250	2
Totals, ...	....	5,911,818	164,226	114,697	8,222,731	1,498,520	4,190	299.53	11,517	29	82	5,330	13,840	961

*In course of construction.
†Idle the entire year.
‡Abandoned during the year.
§Estimated.

TABLE II—Continued.

Names of Operators.	County.	Number of Boilers.				Total hores power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Westmoreland Coal Co.,	Westmoreland,	20	685	8	890	1,575	......	......	......	24	1,850	4	2,000	800	7	2
Penn Gas Coal Co.,	Westmoreland,	12	304	2	604	908	......	2	3	12	1,535	7	3,845	590	3	2
Greensburg Coal Co.,	Westmoreland,	......	....	3	310	310	......	......	......	6	470	3	601	450	......	2
Jamison Coal and Coke Co.,	Westmoreland,	......	....	2	600	600	1	......	......	6	350	2	500	300	......	1
Loyalhanna Coal and Coke Co.,	Westmoreland,	......	....	15	1,290	1,290	1	......	2	14	1,815	7	5,750	2,000	2	......
Hostetter-Connellsville Coke Co.,	Westmoreland,	......	....	11	840	840	3	......	......	6	1,090	5	1,875	1,500	......	......
American Coke Co.,	Westmoreland,	......	....	8	940	940	2	......	......	6	580	2	623	523	......	1
Atlantic Crushed Coal Co.,	Westmoreland,	......	....	3	280	280	......	......	......	6	235	2	375	250	......	......
The Ligonier Coal Co.,	Westmoreland,	......	....	....	....	....	......	......	......	......	....	....	....	....	......	......
Burrell Coal Co.,	Indiana,	......	....	....	....	....	......	......	......	......	....	....	....	....	......	......
Maher Coal and Coke Co.,	Indiana,	......	....	....	....	....	......	......	......	......	....	....	....	....	......	......
McCreary Coke Co.,	Indiana,	......	....	9	1,010	1,010	......	......	......	8	475	....	....	....	......	3
Blairsville Coke Co.,	Indiana,	......	....	....	....	....	......	......	......	......	....	....	....	....	......	......
Ocean Coal Co.,	Westmoreland,	......	....	7	1,400	1,400	......	......	......	8	2,000	4	1,400	300	1	3
Claridge Gas Coal Co.,	Westmoreland,	......	....	2	200	200	......	......	......	2	....	....	....	....	......	......
Manor Gas Coal Co.,	Westmoreland,	......	....	5	215	215	......	......	......	4	125	3	1,125	350	......	......
Spring Hill Gas Coal Co.,	Allegheny,	1	....	1	150	150	1	......	......	2	....	....	....	....	......	......
W. B. Skelly,	Westmoreland,	......	....	....	....	....	......	......	......	......	....	....	....	....	......	......
Penn Manor Shaft Co.,	Westmoreland,	4	74	2	100	174	......	......	......	4	230	2	600	200	......	......
Carbon Coal Co.,	Westmoreland,	......	....	3	350	350	......	1	......	7	246	3	2,460	590	......	1
Sewickley Gas Coal Co.,	Westmoreland,	......	....	3	350	350	......	......	......	2	....	2	....	....	......	......
Arona Gas Coal Co.,	Westmoreland,	......	....	1	100	100	......	......	......	3	....	....	....	....	......	......
Madison Gas Coal Co.,	Westmoreland,	......	....	....	....	....	......	......	......	......	....	....	....	....	......	......
Pittsburg and Baltimore Coal Co.,	Westmoreland,	......	....	2	250	250	......	......	......	5	800	1	50	25	1	1
Hempfield Coal Co.,	Westmoreland,	3	180	4	385	565	......	......	......	5	335	5	2,600	1,000	......	......
Alexandria Coal Co.,	Westmoreland,	......	....	6	615	615	1	......	......	5	330	2	660	500	......	......
Donohoe Coal and Coke Co.,	Westmoreland,	......	....	3	450	450	......	......	1	3	400	1	195	195	1	1
Salem Coal Co.,	Westmoreland,	......	....	2	200	200	......	......	......	3	200	3	275	275	......	1
Huron Coal Co.,	Westmoreland,	......	....	....	....	....	......	......	......	......	....	....	....	....	......	......
Latrobe Coal Co.,	Westmoreland,	2	50	5	410	460	1	......	......	10	430	3	1,300	500	......	......
H. C. Frick Coke Co.,	Westmoreland,	7	280	4	460	740	......	......	......	6	550	3	1,200	900	......	2
Saxman Coal and Coke Co.,	Westmoreland,	......	....	2	400	400	......	......	......	1	....	3	1,400	1,400	......	......

Superior Coal and Coke Co.,	Westmoreland,			2	200	200				1		1	300	300		
Derry Coal and Coke Co.,	Westmoreland,			4	400	400			3	4	750	3	3,500	1,500	2	
Bessemer Coke Co.,	Westmoreland,	4	200			200				3	140					
Millwood Coal and Coke Co.,	Westmoreland,	8	180			180	2			2	480	1	1,260	570		1
Reese-Hammond Fire Brick Co.,	Indiana,															
Bolivar Coal and Coke Co.,	Westmoreland,			1	15	15										
James Kerr,	Indiana,															
Elkins Gas Coal Co.,	Westmoreland,															
American Steel Hoop Co.,	Westmoreland,	1	40	8	600	640	1			3	300	3	720	720		
Ray Coal Co.,	Indiana,															
Robert Smith,	Indiana,															
Graff Coal Co.,	Indiana,															
Dixon Brothers,	Indiana,															
Glenmore Coal and Coke Co.,	Indiana,															
Indiana Coal and Coke Co.,	Indiana,															
Mitchell-Watson Coal and Coke Co.,	Indiana,															
Bowman Coal Mining Co.,	Indiana,															
J. W. Smith Bros. & Co.,	Indiana,															
Seaboard Coal Co.,	Westmoreland,			2	90	90				1	30	2	500	280		
Johnstown Coal Co.,	Indiana,															
Totals,		62	1,993	130	14,104	16,097	13	3	9	172	15,746	77	35,114	16,018	17	21

TABLE III—Showing the number of each class of employes at each colliery in the Second Bituminous District during the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, book-keepers and clerks.	All other employes.	Total outside.	
Westmoreland Coal Co.																		
Export,	Westmoreland,	2	1	416	......	30	23	83	555	1	5	8	16	......	1	31	62	617
Larimer,	Westmoreland,	2	2	342	......	28	16	63	453	1	3	4	6	......	1	28	43	496
Westmoreland shaft,	Westmoreland,	2	3	238	......	29	11	57	340	1	5	6	6	......	3	22	43	383
Total,		6	6	996	......	87	50	203	1,348	3	13	18	28	......	5	81	148	1,496
Penn Gas Coal Co.																		
Coal Run,	Westmoreland,	1	1	71	......	7	2	4	86	1	2	......	1	......	......	8	12	98
No. 1 Penn Gas,	Westmoreland,	1	2	132	......	19	2	9	165	1	2	4	3	......	......	10	20	185
No. 2 Penn Gas,	Westmoreland,	1	5	231	......	32	5	25	299	1	6	8	3	......	......	33	51	350
No. 5 Penn Gas,	Westmoreland,	1	......	97	......	9	2	18	127	1	1	1	1	......	......	11	15	142
Total,		4	8	531	......	67	11	56	677	4	11	13	8	......	......	62	98	775
Greensburg Coal Co.																		
Greensburg No. 1,	Westmoreland,	1	......	60	......	11	1	6	79	......	2	3	......	......	2	10	17	96
Greensburg No. 2,	Westmoreland,	1	......	137	......	9	......	8	155	1	3	3	......	......	2	10	19	174
Radebaugh,	Westmoreland,	1	......	17	......	3	......	1	22	......	......	......	......	......	......	1	1	23
Total,		3	......	214	......	23	1	15	256	1	5	6	......	......	4	21	37	293
Jamison Coal and Coke Co.																		
Jamison No. 1, Jamison No. 2,	Westmoreland,	2	......	225	......	15	3	16	261	2	6	5	......	100	2	20	135	396

Jamison No. 3,	Westmoreland,	1	1	100	......	4	......	40	146	2	5	8	......	50	1	11	77	223
Jamison No. 4,*	Westmoreland,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Total,	......	3	1	325	......	19	3	56	407	4	11	13	......	150	3	31	212	619
Loyalhanna Coal and Coke Co.																		
Loyalhanna No. 1,	Westmoreland,	1	1	201	......	16	3	32	254	1	5	5	5	20	3	39	78	332
Loyalhanna No. 2,	Westmoreland,	......	1	22	......	1	......	5	29	1	......	5	2	......	1	1	10	39
Pandora,	Westmoreland,	1	1	165	......	12	3	20	202	......	20	3	5	......	2	3	33	235
Total,	......	2	3	388	......	29	6	57	485	2	25	13	12	20	6	43	121	606
Hostetter-Connellsville Coke Co.																		
Hostetter,	Westmoreland,	1	2	160	......	16	4	12	195	1	5	5	......	200	1	15	227	422
Whitney,	Westmoreland,	1	2	160	......	16	2	12	193	1	5	6	......	194	2	14	222	415
Total,	......	2	4	320	......	32	6	24	388	2	10	11	......	394	3	29	449	837
American Coke Co.																		
Puritan or Baggaley,	Westmoreland,	2	2	218	......	21	8	29	280	2	5	3	......	132	2	13	157	437
Dorothy,	Westmoreland,	1	1	147	......	16	2	35	202	1	3	3	......	80	2	14	103	305
Total,	......	3	3	365	......	37	10	64	482	3	8	6	......	212	4	27	260	742
Atlantic Crushed Coke Co.																		
Atlantic No. 1,	Westmoreland,	1	......	26	......	4	......	2	33	......	......	......	......	......	......	......	......	......
Atlantic No. 2,	Westmoreland,	1	1	60	......	6	3	4	75	1	2	4	......	23	2	4	36	144
Total,	......	2	1	86	......	10	3	6	108	1	2	4	......	23	2	4	36	144
The Ligonier Coal Co.																		
S. H. Smith,	Westmoreland,	1	......	20	......	2	1	3	27	......	......	......	......	......	1	1	2	29
Ligonier No. 2,†	Westmoreland,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Total,	......	1	......	20	......	2	1	3	27	......	......	......	......	......	1	1	2	29
Burrell Coal Co.																		
Burrell No. 1,	Indiana,	1	......	22	......	2	......	......	25	......	......	......	......	......	2	2	4	29
Burrell No. 2,	Indiana,	1	......	47	......	3	......	......	51	......	......	......	1	......	2	1	4	55
Total,	......	2	......	69	......	5	......	......	76	......	......	......	1	......	4	3	8	84
Maher Coal and Coke Co.																		
Maher No. 2,‡	Indiana,	1	......	5	......	1	......	......	7	......	......	......	......	......	1	......	1	8
Maher No. 3,	Westmoreland,	1	......	36	......	3	......	......	40	......	......	......	1	......	1	1	3	43
Total,	......	2	......	41	......	4	......	......	47	......	......	......	1	......	2	1	4	51
McCreary Coke Co.																		
Graceton No. 1,	Indiana,	1	......	33	......	3	3	8	48	1	2	2	......	10	1	3	19	67
Graceton No. 2,	Indiana,	1	......	95	......	18	5	11	130	2	4	4	......	45	2	10	67	197
Total,	......	2	......	128	......	21	8	19	178	3	6	6	......	55	3	13	86	264

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, book-keepers and clerks.	All other employes.	Total outside.	
Blairsville Coke Co.																		
Graff,	Indiana,	1	......	19	......	2	......	1	23	......	......	......	1	......	......	......	1	24
Graff No. 2,*	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Total,		1	......	19	......	2	......	1	23	......	......	......	1	......	......	......	1	24
Ocean Coal Co.																		
Ocean No. 1,	Westmoreland,	1	5	100	......	16	4	17	143	1	3	8	4	......	2	7	25	168
Ocean No. 2,	Westmoreland,	......	......	......	......	......	......	......	......	......	1	3	......	......	1	3	8	8
Total,		1	5	100	......	16	4	17	143	1	4	11	4	......	3	10	33	176
Claridge Gas Coal Co.																		
Claridge,	Westmoreland,	1	......	240	......	22	5	13	281	......	5	3	......	......	1	12	21	302
Manor Gas Coal Co.																		
Denmark,	Westmoreland,	1	2	267	......	23	7	10	310	1	4	4	2	......	3	10	24	334
Spring Hill Gas Coal Co.																		
Spring Hill,	Allegheny,	1	......	95	......	8	3	5	112	1	2	4	......	......	2	5	14	126
W. B. Skelly.																		
Elizabeth,	Westmoreland,	1	......	38	......	1	1	......	41	......	......	......	......	......	1	3	4	45
Penn Manor Shaft Co.																		
Penn Manor,	Westmoreland,	1	1	70	......	5	1	7	85	1	2	3	......	......	2	14	22	107

Carbon Coal Co. Carbon, ...	Westmoreland,.	2	......	182	......	18	......	10	212	1	3	4	......	22	3	17	50	262
Sewickley Gas Coal Co. Sewickley, ...	Westmoreland,.	1	2	187	......	18	6	13	227	1	5	3	2	......	3	28	42	269
Arona Gas Coal Co. Arona, ...	Westmoreland,.	1	......	272	......	20	6	12	311	1	5	3	2	......	2	15	28	339
Madison Gas Coal Co. Madison, ...	Westmoreland,.	1	......	183	......	10	4	4	202	1	2	......	2	......	2	9	16	218
Pittsburg and Baltimore Coal Co. Baltimore No. 1, ...	Westmoreland,.	1	......	80	......	5	1	1	88	1	2	3	......	......	1	9	16	104
Hempfield Coal Co. Hempfield, ...	Westmoreland,.	2	......	123	......	13	2	8	148	......	4	5	......	......	2	17	28	176
Alexandria Coal Co. Alexandria, ...	Westmoreland,.	1	......	245	......	22	4	13	285	1	5	8	......	49	3	15	81	366
Donohoe Coal and Coke Co. Donohoe, ...	Westmoreland,.	1	......	103	......	7	......	3	114	1	3	3	......	57	4	20	88	202
Salem Coal Co. Salem, ...	Westmoreland,.	1	......	60	......	10	2	10	83	3	3	2	......	18	2	2	30	113
Huron Coal Co. Huron, ...	Westmoreland.	1	......	64	......	4	......	......	69	......	1	......	......	......	1	10	12	81
Latrobe Coal Co. Latrobe, ...	Westmoreland,.	1	1	182	......	26	15	2	227	1	6	6	......	60	3	4	80	307
H. C. Frick Coke Co. Monastery, ...	Westmoreland,.	1	1	74	......	14	3	4	97	2	3	12	......	70	2	10	99	196
Saxman Coal and Coke Co. M. Saxman, ...	Westmoreland,.	1	......	80	......	11	1	7	100	......	1	3	......	20	2	5	31	131
Superior Coal and Coke Co. Superior No. 1, ...	Westmoreland,.	1	......	90	......	10	2	5	108	......	1	2	......	24	2	3	32	140
Derry Coal and Coke Co. Derry Shaft, ...	Westmoreland,.	2	2	230	......	16	15	......	265	1	3	5	......	43	3	5	60	325
Bessemer Coke Co. Saint Clair, ...	Westmoreland,.	1	......	128	......	14	4	6	153	1	2	5	......	116	2	20	146	299
Millwood Coal and Coke Co. Millwood, ...	Westmoreland,.	1	1	80	......	17	2	6	107	1	4	3	1	......	1	14	24	131
Reese-Hammond Fire Brick Co. Indiana, ...	Indiana,.........	1	......	14	......	2	......	......	17	......	......	......	......	......	......	2	2	19

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, book-keepers and clerks.	All other employes.	Total outside.	Grand total, inside and outside.
Bolivar Coal and Coke Co. Lockport,	Westmoreland,	1	......	10	......	2	......	1	14	......	......	......	1	2	1	1	5	19
James Kerr. Lincoln,	Indiana,	1	......	19	......	2	......	1	23	......	......	......	......	......	......	......	......	23
Elkins Gas Coal Co. Pleasant Valley,	Westmoreland,	1	......	179	......	14	8	......	202	1	2	......	......	......	1	12	16	218
American Steel Hoop Co. Isabella,	Westmoreland,	1	1	88	......	12	2	8	112	1	5	7	......	52	2	20	87	199
Ray Coal Co., Ray,	Indiana,	1	......	30	......	2	......	......	33	......	......	......	1	......	2	1	4	37
Robert Smith. Smith,	Indiana,	1	......	50	......	5	......	1	57	......	......	......	......	......	......	3	3	60
Graff Coal Co. Blacklick,	Indiana,	1	......	30	......	3	......	2	36	......	......	......	......	......	1	3	4	40
Dixon Brothers. Dixon,	Indiana,	1	......	21	......	2	......	......	24	......	......	......	......	......	1	......	......	25
Glenmore Coal and Coke Co.§ Tearing Run,	Indiana,	1	......	9	......	2	......	......	12	......	......	......	......	......	......	......	......	12

Indiana Coal and Coke Co. Mitchell,	Indiana,	1	......	40	......	2	2	1	46	......	1	......	......	5	......	......	6	52
Mitchell-Watson Coal and Coke Co. Mitchell-Watson No. 1,†	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Bowman Coal Mining Co. Bowman,	Indiana,	1	......	49	......	4	......	2	56	......	1	......	......	......	1	2	4	60
J. W. Smith Bros & Co. Edrl,	Indiana,	1	......	4	......	1	......	......	6	......	......	......	......	......	......	3	3	9
Seaboard Coal Co. Seaboard,	Westmoreland,	......	1	8	......	1	......	......	10	1	......	2	......	......	1	......	4	14
Johnstown Coal Co. Cramer,	Indiana,	1	......	13	......	2	......	......	16	......	......	......	......	......	......	1	1	17

*In course of construction.
†Idle the entire year.
‡Abandoned during the year.
§Estimated.

Recapitulation.

Westmoreland Coal Co.,	Westmoreland,	6	6	996	......	87	50	203	1,348	3	13	18	28	......	5	81	148	1,496
Penn Gas Coal Co.,	Westmoreland,	4	8	531	......	67	11	56	677	4	11	13	8	......	......	62	98	775
Greensburg Coal Co.,	Westmoreland,	3	......	214	......	23	1	15	256	1	5	6	......	......	4	21	37	293
Jamison Coal and Coke Co.,	Westmoreland,	3	1	325	......	19	3	56	407	4	11	13	......	150	3	31	212	619
Loyalhanna Coal and Coke Co.,	Westmoreland,	2	3	388	......	29	6	57	485	2	25	13	12	20	6	43	121	606
Hostetter-Connellsville Coke Co.,	Westmoreland,	2	4	320	......	32	6	24	388	2	10	11	......	394	3	29	449	837
American Coke Co.,	Westmoreland,	3	3	365	......	37	10	64	482	3	8	6	......	212	4	27	260	742
Atlantic Crushed Coke Co.,	Westmoreland,	2	1	86	......	10	3	6	108	1	2	4	......	23	2	4	36	144
The Ligonier Coal Co.,	Westmoreland,	1	......	20	......	2	1	3	27	......	......	......	......	......	1	1	2	29
Burrell Coal Co.,	Indiana,	2	......	69	......	5	......	......	76	......	......	......	1	......	4	3	8	84
Maher Coal and Coke Co.,	Indiana,	2	......	41	......	4	......	......	47	......	......	......	1	......	2	1	4	51
McCreary Coke Co.,	Indiana,	2	......	128	......	21	8	19	178	3	6	6	......	55	3	13	86	264
Blairsville Coke Co.,	Indiana,	1	......	19	......	2	......	1	23	......	......	......	1	......	......	......	1	24
Ocean Coal Co.,	Westmoreland,	1	5	100	......	16	4	17	143	1	4	11	4	......	3	10	33	176
Claridge Gas Coal Co.,	Westmoreland,	1	......	240	......	22	5	13	281	......	5	3	......	......	1	12	21	302
Manor Gas Coal Co.,	Westmoreland,	1	2	267	......	23	7	10	310	1	4	4	2	......	3	10	24	334
Spring Hill Gas Coal Co.,	Allegheny,	1	......	95	......	8	3	5	112	1	2	4	......	......	2	5	14	126
W. B. Skelly,	Westmoreland,	1	......	38	......	1	1	......	41	......	......	......	......	......	1	3	4	45
Penn Manor Shaft Co.,	Westmoreland,	1	1	70	......	5	1	7	85	1	2	3	......	......	2	14	22	107
Carbon Coal Co.,	Westmoreland,	2	......	182	......	18	......	10	212	1	3	4	......	22	3	17	50	262
Sewickley Gas Coal Co.,	Westmoreland,	1	2	187	......	18	6	13	227	1	5	3	2	......	3	28	42	269
Arona Gas Coal Co.,	Westmoreland,	1	......	272	......	20	6	12	311	1	5	3	2	......	2	15	28	339
Madison Gas Coal Co.,	Westmoreland,	1	......	183	......	10	4	4	202	1	2	......	2	......	2	9	16	218
Pittsburg and Baltimore Coal Co.,	Westmoreland,	1	......	80	......	5	1	1	88	1	2	3	......	......	1	9	16	104
Hempfield Coal Co.,	Westmoreland,	2	......	123	......	13	2	8	148	......	4	5	......	......	2	17	28	176
Alexandria Coal Co.,	Westmoreland,	1	......	245	......	22	4	13	285	1	5	8	......	49	3	15	81	366
Donohoe Coal and Coke Co.,	Westmoreland,	1	......	103	......	7	......	3	114	1	3	3	......	57	4	20	88	202
Salem Coal Co.,	Westmoreland,	1	......	60	......	10	2	10	83	3	3	2	......	18	2	2	30	113
Huron Coal Co.,	Westmoreland,	1	......	64	......	4	......	......	69	......	1	......	......	......	1	10	12	81

Recapitulation—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, book-keepers and clerks.	All other employes.	Total outside.	
Latrobe Coal Co.,	Westmoreland,	1	1	182	......	26	15	2	227	1	6	6	......	60	3	4	80	307
H. C. Frick Coke Co.,	Westmoreland,	1	1	74	......	14	3	4	97	2	3	12	......	70	2	10	99	196
Saxman Coal and Coke Co.,	Westmoreland,	1	......	80	......	11	1	7	100	......	1	3	......	20	2	5	31	131
Superior Coal and Coke Co.,	Westmoreland,	1	......	90	......	10	2	5	108	......	1	2	......	24	2	3	32	140
Derry Coal and Coke Co.,	Westmoreland,	2	2	230	......	16	15	......	265	1	3	5	......	43	3	5	60	325
Bessemer Coke Co.,	Westmoreland,	1	......	128	......	14	4	6	153	1	2	5	......	116	2	20	146	299
Millwood Coal and Coke Co.,	Westmoreland,	1	1	80	......	17	2	6	107	1	4	3	1	......	1	14	24	131
Reese-Hammond Fire Brick Co.,	Indiana,	1	......	14	......	2	......	......	17	......	......	......	......	......	......	2	2	19
Bolivar Coal and Coke Co.,	Westmoreland,	1	......	10	......	2	......	1	14	......	......	......	1	2	1	1	5	19
James Kerr,	Indiana,	1	......	19	......	2	......	1	23	......	......	......	......	......	......	......	......	23
Elkins Gas Coal Co.,	Westmoreland,	1	......	179	......	14	8	......	202	1	2	......	......	......	1	12	16	218
American Steel Hoop Co.,	Westmoreland,	1	1	88	......	12	2	8	112	1	5	7	......	52	2	20	87	199
Ray Coal Co.,	Indiana,	1	......	30	......	2	......	......	33	......	......	......	1	......	2	1	4	37
Robert Smith,	Indiana,	1	......	50	......	5	......	1	57	......	......	......	......	......	......	3	3	60
Graff Coal Co.,	Indiana,	1	......	30	......	3	......	2	36	......	......	......	......	......	1	3	4	40
Dixon Brothers,	Indiana,	1	......	21	......	2	......	......	24	......	......	......	......	......	1	......	1	25
Glenmore Coal and Coke Co.,§	Indiana,	1	......	9	......	2	......	......	12	......	......	......	......	......	......	......	......	12
Indiana Coal and Coke Co.,	Indiana,	1	......	40	......	2	2	1	46	......	1	......	......	5	......	......	6	52
Mitchell-Watson Coal and Coke Co.,*	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Bowman Coal Mining Co.,	Indiana,	1	......	49	......	4	......	2	56	......	1	......	......	......	1	2	4	60
J. W. Smith Bros. & Co.,	Indiana,	1	......	4	......	1	......	......	6	......	......	......	......	......	......	3	3	9
Seaboard Coal Co.,	Westmoreland,	......	1	8	......	1	......	......	10	1	......	2	......	......	1	......	4	14
Johnstown Coal Co.,	Indiana,	1	......	13	......	2	......	......	16	......	......	......	......	......	......	1	1	17
Totals and average,		73	43	7,239	......	704	199	676	8,934	46	170	191	66	1,392	97	621	2,583	11,517

TABLE III—Continued.

Names of Operators.	County.	Number of Days Worked in Each Month.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Westmoreland Coal Co.,	Westmoreland,	25 1-3	23 1-3	25¾	25	25	24	22	26	24	25	24 1-3	22 2-3	292.42
Penn Gas Coal Co.,	Westmoreland,	20	15¼	16¾	10½	8¼	12½	15	15¼	14¾	18½	21	21	188.75
Greensburg Coal Co.,	Westmoreland,	24 1-3	27¼	21	22	23 1-3	22 1-3	21½	19	19	22	23 1-3	18	263.08
Jamison Coal and Coke Co.,	Westmoreland,	27	24	26	26	25	26	27	25	27	25	26	26	310
Loyalhanna Coal and Coke Co.,	Westmoreland,	24	21	12	21	20 1-3	17 1-3	21	21 1-3	20	25 2-3	22 2-3	22 2-3	249
Hostetter-Connellsville Coke Co.,	Westmoreland,	27	24	26	26	27	23	26	25	25	27	25	19½	300.50
American Coke Co.,	Westmoreland,	27	25	26	25	27	25	26	27	16	25½	24½	21	295
Atlantic Crushed Coke Co.,	Westmoreland,	21	18	19	20	19	20	13	16	16	19	22	24	227
The Ligonier Coal Co.,	Westmoreland,	22	20½	23¾	25	18½	14½	14½	12	11½	23½	22½	23	231.25
Burrell Coal Co.,	Indiana,	20½	19½	23	21½	23	22½	23½	22½	22½	25	22	23	268.50
Maher Coal and Coke Co.,	Indiana,	23	22	24	12	20	22	22	24	19	24	17	20	249
McCreary Coke Co.,	Indiana,	26½	23	25	26	27	24½	25½	27	25	26	25	21	301.50
Blairsville Coke Co.,	Indiana,	22	15	24	24	19	18	23	18	22	23	18	21	247
Ocean Coal Co.,	Westmoreland,	19	18	21	15	9	22	22	19	15	18	26	22	226
Claridge Gas Coal Co.,	Westmoreland,	26	24	26	26	27	23	26	27	24	27	25	25	306
Manor Gas Coal Co.,	Westmoreland,	26	23	26	23	25	22	24	27	24	26	25	24	295
Spring Hill Gas Coal Co.,	Allegheny,	27	24	26	26	27	25	27	25	26	26	27	27	313
W. B. Skelly,	Westmoreland,	25	21	19	12	14	14	18	15	16	13	10	8	185
Penn Manor Shaft Co.,	Westmoreland,	18	12	16	12	16	14	15	17	15	15	16	14	180
Carbon Coal Co.,	Westmoreland,	24¼	19¼	18½	19	23½	22	24¾	19½	20½	23	17½	18½	250.25
Sewickley Gas Coal Co.,	Westmoreland,	22	21	25	17	23	24	25	23	24	26	22	21	273
Arona Gas Coal Co.,	Westmoreland,	22	19	21	22	22	24	24	25	23	19	16	14	251
Madison Gas Coal Co.,	Westmoreland,	23	20	24	25	22	25	26	26	24	26	24	23	288
Pittsburg and Baltimore Coal Co.,	Westmoreland,	....	....	....	....	12	25	17	21	25	26	25	21	172
Hempfield Coal Co.,	Westmoreland,	27	24	26	26	27	25	27	27	25	27	26	26	313
Alexandria Coal Co.,	Westmoreland,	25	24	25	26	26	25	25	26	24	25	23	20	294
Donohoe Coal and Coke Co.,	Westmoreland,	17	15	19	23	17	16	21	19	21	24	20	17	229
Salem Coal Co.,	Westmoreland,	26	21	15	24	24	25	15	17	15	19	22	22	245
Huron Coal Co.,	Westmoreland,	....	3	23	23	25	25	25	26	23	27	26	27	253
Latrobe Coal Co.,	Westmoreland,	26	24	26	22	24	25	23	24	23	27	25	25	294
H. C. Frick Coke Co.,	Westmoreland,	21	22	25	21	19	14	15	14	14	22	26	23	236
Saxman Coal and Coke Co.,	Westmoreland,	....	....	....	....	....	....	26	27	25	27	26	25	156
Superior Coal and Coke Co.,	Westmoreland,	21	15	26	26	26	25	26	27	24	27	26	25	294
Derry Coal and Coke Co.,	Westmoreland,	27	24	26	23	25	24	21	21	19	27	26	25	288

TABLE III—Continued.

Names of Operators.	County.	Number of Days Worked in Each Month.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Bessemer Coke Co.,	Westmoreland,	10	13	24	25	26	23	23	23	21	24	26	11	249
Millwood Coal and Coke Co.,	Westmoreland,	26	24	26	25	26	24	25	25	23	26	22	25	297
Reese-Hammond Fire Brick Co.,	Indiana,	25	25	25	25	25	25	25	25	25	25	25	25	300
Bolivar Coal and Coke Co.,	Westmoreland,	18	5	6	16	17	7	8	13	19	23	23	24	179
James Kerr,	Indiana,	19	9	9	4½	8	....	3	6	9	....	7	18	92.50
Elkins Gas Coal Co.,	Westmoreland,	18¼	10½	12	11	17	16	18¾	19	17¾	20¾	17¾	20¾	199.50
American Steel Hoop Co.,	Westmoreland,	26	14	....	....	26	26	26	15	....	....	26	26	185
Ray Coal Co.,	Indiana,	23	20	20	20	18	21	23	20	20	24	19	17	245
Robert Smith,	Indiana,	24	18	23	20	23	19	24	20	21	22	23	26	263
Graff Coal Co.,	Indiana,	19	19	25	25	10	24	17	13	24	19	25	20	240
Dixon Brothers,	Indiana,	....	....	....	....	....	....	....	....	15	19	20	23	77
Glenmore Coal and Coke Co.,	Indiana,	....	....	....	10	20	20	15	20	15	15	20	20	155
Indiana Coal and Coke Co.,	Indiana,	20	21	25	24	20	8	8	....	....	....	4	25	155
Mitchell-Watson Coal and Coke Co.,	Indiana,	....	....	....	....	....	....	....	....	....	....	....	....	....
Bowman Coal Mining Co.,	Indiana,	22	23	25	22	22	24	24	24	21	26	24	25	282
J. W. Smith Bros. & Co.,	Indiana,	....	....	....	....	....	....	....	....	....	....	20	22	42
Seaboard Coal Co.,	Westmoreland,	....	....	....	....	....	....	20	20	20	20	20	20	120
Johnstown Coal Co.,	Indiana,	26	16	21	21	12	5	18	13	23	24	15	18	212
Totals and average,	....	19.76	17.03	18.95	18.50	19.33	18.77	20.20	19.77	19.29	21.44	21.75	21.59	236.38

TABLE IV—List of fatal accidents that occurred in and about the mines of the Second Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	9	William Stevenson,	English,	Driver,	27	M.	1	2	Atlantic No. 2,	Westmoreland,	Fatally injured; caught between car and pillar.
	9	John Yapsik,	Pole,	Miner,	37	M.	1	2	Penn Manor,	Westmoreland,	Fatally injured by a fall of coal.
	14	Peter Kilday,	Scotch,	Roadman,	28	M.	1	2	Sewickley,	Westmoreland,	Killed; run over by cars.
Feb.	4	Villani Guiseppe,	Italian,	Miner,	22	S.	....	....	Millwood,	Westmoreland,	Killed; run over by car.
	18	Patrick Hughes,	Irish,	Miner,	57	M.	1	....	Larimer,	Westmoreland,	Instantly killed by a fall of slate.
	19	Joseph Loughery,	Scotch,	Miner,	19	S.	....	....	Alexandria,	Westmoreland,	Instantly killed; caught between car and coal pillar.
	26	Mathias Anssitz,	Austrian,	Miner,	33	M.	1	2	Dorothy,	Westmoreland,	Instantly killed by the same fall of slate.
	26	Joseph Epovich,	Austrian,	Miner,	31	M.	1	....	Dorothy,	Westmoreland,	
	27	George Uhas,	Slav,	Machine loader,	38	S.	....	....	Westmoreland shaft,	Westmoreland,	Fatally injured; caught between car and pillar.
March	15	George Lindsay,	American,	Miner,	28	M.	1	1	Jamison No. 1,	Westmoreland,	Instantly killed by a fall of "horse-back" slate.
	16	Joseph Georsa,	Italian,	Machine loader,	27	S.	....	....	Larimer,	Westmoreland,	Instantly killed by a fall of slate.
April	2	Andrew Collissa,	Slav,	Door boy,	13	....	....	....	Graceton No. 2,	Indiana,	Instantly killed by runaway cars.
	19	John Heckman,	German,	Miner,	39	M.	1	6	Monastery,	Westmoreland,	Fatally injured by a fall of slate.
May	31	George Collissa,	Hungarian,	Miner,	37	M.	1	6	Graceton No. 2,	Indiana,	Fatally injured by a fall of slate.
June	1	Frank Chicone,	Italian,	Miner,	25	S.	....	....	Donohoe,	Westmoreland,	Instantly killed by a fall of coal.
	3	Geo. Weightman,	English,	Asst. mine boss	61	M.	1	2	Claridge,	Westmoreland,	Killed; run over by cars.
	24	Tim Hollihan,	Irish,	Road boss,	57	M.	1	....	Larimer,	Westmoreland,	Fatally injured by being struck by cars.
July	1	John Hudis,	Pole,	Miner,	32	M.	1	5	Monastery,	Westmoreland,	Instantly killed by a fall of slate.
	3	Gottfried Eichner,	German,	Miner,	46	M.	1	4	Latrobe,	Westmoreland,	Back broken by fall of roof; died July 24.
	19	Samuel Smith,	American,	Outside laborer,	47	M.	1	4	Baltimore No. 1,	Westmoreland,	Instantly killed by being caught in ventilating fan.
Aug.	7	Antonio Serretto,	Italian,	Machine loader,	27	S.	....	....	Westmoreland shaft,	Westmoreland,	Instantly killed by a fall of coal.
	7	Wm. S. Hall,	American,	Pumper,	53	M.	1	4	Monastery,	Westmoreland,	Instantly killed by being struck by cars.
	24	M. C. O'Brien,	American,	Fire boss,	29	M.	1	3	Whitney,	Westmoreland,	Fatally injured by a fall of slate.
Oct.	7	Glen Woods,	American,	Oiler,	16	S.	....	....	Export,	Westmoreland,	Fatally injured; run over by cars.
	11	Alfred Gullim,	Welsh,	Miner,	53	M.	1	1	Spring Hill,	Allegheny,	Instantly killed by a fall of slate.
Nov.	25	Joseph Lashko,	Austrian,	Driver,	27	M.	1	2	Whitney,	Westmoreland,	Caught between car and pillar; died November 28th.
	26	Mike Krayak,	Slav,	Miner,	50	M.	1	3	Saint Clair,	Westmoreland,	Fatally injured; run over by cars.
Dec.	11	John Mohar,	Austrian,	Driver,	26	S.	....	....	Larimer,	Westmoreland,	Kicked by a mule; died Dec. 13th.
	27	Antonio Cacini,	Italian,	Miner,	22	S.	....	....	Pandora,	Westmoreland,	Instantly killed by a fall of slate.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Second Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	2	Galnil Frebor,	Russian,	Miner,	30	S.	Ocean No. 1,	Westmoreland,	Back injured by a fall of slate.
	4	Edward Reynolds,	American,	Laborer,	17	S.	Indiana,	Indiana,	Arm broken; thrown from runaway car.
	16	Frank Keiffer,	American,	Cager,	18	S.	Pandora,	Westmoreland,	Leg bruised; tripped and fell.
	19	Albert Lehman,	German,	Miner,	37	S.	Sewickley,	Westmoreland,	Leg broken by fall of slate.
Feb.	21	George Davis,	American,	Machine loader,	30	M.	No. 2 Penn Gas,	Westmoreland,	Collar bone broken; thrown from car.
March	5	Steve Mehalick,	Slav,	Miner,	24	S.	Whitney,	Westmoreland,	Injured; caught between roof and truck.
	8	Doc Silvis,	American,	Miner,	22	S.	Radebaugh,	Westmoreland	Arm broken by fall of slate.
	11	James Rothwell,	English,	Miner,	46	M.	Sewickley,	Westmoreland,	Ribs and nose broken by fall of coal.
	18	Wm. Kloshusky,	Pole,	Cager,	41	M.	Jamison No. 3,	Westmoreland,	Leg broken; caught between cars.
	19	Simon Riffle,	American,	Miner,	28	M.	Carbon,	Westmoreland,	Leg broken; caught between cars.
	29	Joseph Letettesky,	Slav,	Miner,	26	M.	Puritan,	Westmoreland.	Injured; fall of roof.
April	1	Jacob Cassila,	Italian,	Machine loader,	30	S.	Ocean No. 1,	Westmoreland,	Ankle fractured; fall of slate.
	1	Joseph Clineck,	Russian,	Driver,	28	S.	Ocean No. 1,	Westmoreland,	Foot crushed; run over by car.
	6	Thomas Burke,	American,	Miner,	16	....	Whitney,	Westmoreland,	Injured; kicked by a horse.
	12	Simon Bayjo,	Slav,	Miner,	60	M.	Puritan,	Westmoreland	Leg broken between car and pillar.
	29	Vesco Uhertino,	Italian,	Miner,	35	S.	Millwood,	Westmoreland,	Hip dislocated by a fall of slate.
May	8	Ciprian Pilloto,	Italian,	Miner,	46	M.	Pleasant Valley,	Westmoreland,	Ribs broken by a fall of slate.
	11	Frank Monti,	Italian,	Miner,	19	S.	Millwood,	Westmoreland,	Thigh broken by a falling cage.
	11	John Scarpsinello,	Italian,	Miner,	52	M.	Millwood,	Westmoreland,	Bruised by falling cage.
	11	Peter Peretts,	Italian,	Miner,	42	S.	Millwood,	Westmoreland,	Bruised by falling cage.
	11	Mike Vesco,	Italian,	Miner,	21	S.	Millwood,	Westmoreland,	Bruised by falling cage.
	11	John Bogatti,	Italian,	Miner,	17	S.	Millwood,	Westmoreland,	Bruised by falling cage.
	11	Antoney Garetto,	Italian,	Miner,	25	S.	Millwood,	Westmoreland,	Bruised by falling cage.
	11	Furgi Fago,	Italian,	Miner,	21	S.	Millwood,	Westmoreland,	Bruised by falling cage.
	11	Richard Breen,	American,	Cager,	32	M.	Millwood,	Westmoreland,	Bruised by falling cage.
	11	Levi Baughman,	American,	Miner,	49	M.	Baltimore No. 1,	Westmoreland.	Five ribs broken by fall of slate.
	21	Andy Jomore,	Slav,	Machine loader,	18	S.	Jamison No. 3,	Westmoreland.	Arm crushed by fall of slate, necessitating amputation.
	21	John Cholnosky,	Slav,	Machine loader,	32	M.	Jamison No. 3,	Westmoreland,	Injured by fall of slate.
	30	Andy Mouser,	Slav,	Roadman,	25	M.	Whitney,	Westmoreland,	Both legs broken by fall of slate.
June	10	John Ruffner,	American,	Miner,	28	M.	Greensburg No. 1,	Westmoreland	Leg broken by a fall of slate.
	15	J. C. Uncapher,	American,	Miner,	51	M.	Smith,	Indiana,	Thigh broken by a fall of slate.
	21	Bernard Farker,	American,	Miner,	21	S.	Arona,	Westmoreland,	Thigh broken by a fall of slate.
	22	August Tasezzi,	Italian,	Miner,	19	S.	Denmark,	Westmoreland,	Leg fractured by a fall of coal.
July	8	John Ragensburger,	Slav,	Miner,	38	M.	Whitney,	Westmoreland,	Nose broken by a fall of slate.

Aug.	9	Mike Shafran,	Slav,	Miner,	35	M.	Latrobe,	Westmoreland,	Both arms broken; struck by cars.
	5	John Lenotovitz,	Pole,	Miner,	30	S.	Claridge,	Westmoreland,	Foot crushed by a fall of slate.
	7	Andy Giacinnellea,	Italian,	Machine loader,	16	S.	Westmoreland shaft,	Westmoreland,	Leg broken by a fall of slate.
	8	Mike Lee,	Italian,	Driver,	19	S.	Millwood,	Westmoreland,	Shoulder dislocated; caught between car and door frame.
	9	Salvadore Lee,	Italian,	Miner,	24	S.	Millwood,	Westmoreland,	Back injured by fall of slate.
	10	Mike Condra,	Hungarian,	Miner,	38	M.	Hostetter,	Westmoreland,	Leg fractured by fall of slate.
	14	George Rusnack,	Pole,	Miner,	46	M.	Jamison No. 2,	Westmoreland,	Bruised about body; caught between cars and pillar.
	17	John Irondale,	English,	Miner,	57	M.	Jamison No. 2,	Westmoreland,	Rib broken by fall of slate.
	18	John Batchocy,	Slav,	Miner,	36	M.	Puritan,	Westmoreland,	Leg broken by fall of slate.
	19	Joseph Cook,	German,	Miner,	26	M.	Madison,	Westmoreland,	Leg broken by fall of slate.
	27	Alex. Bike,	Russian,	Machine loader,	32	M.	Westmoreland shaft,	Westmoreland,	Leg broken by fall of slate.
	27	Stiney Bydock,	Pole,	Machine loader,	34	S.	Westmoreland shaft,	Westmoreland,	Leg broken by fall of slate.
	31	George Keslnig,	Slav,	Miner,	38	M.	Hostetter,	Westmoreland,	Leg broken by fall of roof.
Sept.	4	Joseph Slefneck,	Slav,	Driver,	24	M.	Hostetter,	Westmoreland,	Injured; caught between car and pillar.
	9	John Maroll,	Italian,	Miner,	34	M.	Jamison No. 2,	Westmoreland,	Leg broken by a fall of slate.
	10	Frank Leslie,	Pole,	Miner,	38	M.	Hostetter,	Westmoreland,	Collar bone and leg broken by fall of roof.
	12	Abram Canepeli,	Austrian,	Miner,	39	M.	Denmark,	Westmoreland,	Injured internally by a fall of coal.
	16	James Martin,	American,	Miner,	44	M.	Radebaugh,	Westmoreland,	Injured internally by a fall of coal.
	17	John Curitto,	Italian,	Miner,	43	S.	Jamison No. 2,	Westmoreland,	Leg broken by mine cars.
	17	John Neretli,	Italian,	Machine loader,	29	S.	Larimer,	Westmoreland,	Leg broken by a fall of slate.
	18	Lewis Hammond,	American,	Tippleman,	40	M.	Greensburg No. 1,	Westmoreland,	Knee joint dislocated; struck by haulage rope.
	23	Robert Mansfield,	English,	Miner,	42	M.	Sewickley,	Westmoreland,	Leg broken and foot crushed, necessitating amputation; run over by cars
	27	John Nefoti,	Hungarian,	Miner,	30	M.	Graceton No. 2,	Indiana,	Back injured by a fall of roof.
	27	Andy Pochinskey,	Hungarian,	Miner,	28	M.	Graceton No. 2,	Indiana,	Back injured by a fall of roof.
	27	John Krommor,	Pole,	Miner,	32	M.	Latrobe,	Westmoreland.	Compound fracture of left leg; fall of roof.
Oct.	1	Lin Geange,	Italian,	Miner,	40	M.	Elizabeth,	Westmoreland,	Leg broken by a fall of slate and coal.
	2	Edward C. Garlow,	American,	Miner,	26	M.	Sewickley,	Westmoreland,	Injured by a fall of slate.
	8	Bartholmew Farraco,	Italian,	Miner,	34	M.	Ocean No. 1,	Westmoreland.	Leg broken in two places, collar bone broken and injured internally by a fall of slate.
	9	G. F. Fritchman,	American,	Miner,	37	S.	Carbon,	Westmoreland,	Leg broken by a fall of coal.
	11	Charles Probert,	English,	Miner,	57	M.	Spring Hill,	Allegheny,	Both feet injured by a fall of slate and coal.
	14	Joseph Kravatich,	Pole,	Miner,	30	S.	Claridge,	Westmoreland,	Leg broken by a fall of slate.
	19	Nicholas Bailey,	Slav,	Miner,	22	S.	Jamison No. 3,	Westmoreland,	Leg broken; caught between mine cars.
	22	David M. Anderson,	American,	Tippleman,	41	M.	Burrell No. 1,	Indiana,	Three toes injured; run over by mine cars.
	26	Adolph Schmitt,	German,	Miner,	59	S.	Sewickley,	Westmoreland.	Leg crushed, necessitating amputation; run over by mine cars.
	28	John Augaust,	Pole,	Miner,	27	S.	Donohoe,	Westmoreland,	Leg broken and head cut by a fall of coal.
Nov.	15	Thomas McCormick,	American,	Driver,	21	S.	Monastery,	Westmoreland,	Right foot and ankle crushed between mine car and fall of roof.
	20	Paul Zesick,	Austrian,	Machine loader,	21	S.	Larimer,	Westmoreland,	Toe cut off by mining machine.
	26	Carl Sandrik,	Austrian	Machine loader,	25	S.	Larimer,	Westmoreland.	Thigh broken by a fall of slate.

TABLE V—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Dec.	2	Albert Garland,	American,	Miner,	57	M.	Jamison No. 2,	Westmoreland,	Back sprained by a fall of coal.
	6	Richard Stump,	American,	Miner,	22	M.	Smith,	Indiana,	Head cut and bruised; fell between cars.
	11	Mike Valdy,	Italian,	Miner,	35	M.	Loyalhanna No. 1,	Westmoreland,	Leg broken by a fall of slate and coal.
	12	Nick Zinid,	Austrian,	Miner,	23	S.	Huron,	Westmoreland,	Foot broken by a fall of coal, necessitating amputation.
	24	George Bobsack,	Slav,	Miner,	31	S.	Jamison No. 1,	Westmoreland,	Breast injured by a fall of "horseback" slate.
	26	P. Miller,	American,	Driver,	23	S.	Jamison No. 1,	Westmoreland,	Leg injured; fell under cars.
	26	C. Franklin,	American,	Miner,	32	M.	Jamison No. 1,	Westmoreland,	Injured by fall of "horseback" slate.
	26	P. Gion,	Italian,	Miner,	26	S.	Jamison No. 1,	Westmoreland,	Foot injured; run over by car.
	26	John Lontonia,	Italian,	Miner,	35	S.	Huron,	Westmoreland,	Leg broken by a fall of coal.
	28	John Siminow,	Slav,	Miner,	27	S.	Export,	Westmoreland,	Leg broken; run over by cars.

Third Bituminous District.

ALLEGHENY, ARMSTRONG, BUTLER, BEAVER, CLARION, LAWRENCE, JEFFERSON AND WESTMORELAND COUNTIES.

Mercer, Pa., February, 1902.

Hon. James W. Latta, Secretary of Internal Affairs:

Sir: In compliance with the Bituminous mining act approved May 15, 1893, I herewith submit my annual report of the Third Bituminous District for the year ending December 31, 1901.

Owing to the change made in the boundary lines of the different districts and the appointment of two additional Inspectors, this district has been very much enlarged during the year 1901. This fact alone will account for the very large increase in the number of mines, tonnage and employes of this district. The general prosperity of the district would have been more marked had the coal companies been supplied with adequate car facilities. Nothing otherwise (except a local strike about prices to be paid miners for taking up floor in rooms at two of the mines, State Line and Sterling, in Beaver county), has occurred to disturb trade conditions in the district during the year.

Seven persons lost their lives, and forty were injured in and about the mines of the district during the year. This is an increase of one in the fatal, and a decrease of thirteen in the non-fatal accidents as compared with those of the year 1900, but if the number of deaths is compared with the coal tonnage for the last two years, the death rate is nearly equal. Four of those who lost their lives were the victims of their own neglect, one lost his life by disobeying the orders of the mine foreman, and two were killed through errors of judgment.

A description of the mines, the general statistics, etc., will be found in another part of the report.

All of which is respectfully submitted,

THOMAS K. ADAMS,
Inspector.

The following is a summary of the mining statistics and classification of the accidents. The figures denoting production, shipment, etc., are short tons:

Number of mines in the district,	100
Number of mines in operation during 1901,	103
Number of tons of coal produced,	5,604,079
Number of tons shipped,	4,940,015.5
Number of tons used in the manufacture of coke, approximately,	257,694.5
Number of tons used for steam at the mines,	108,477
Number of tons sold to employes and others,	297,892
Number of tons of coal produced by pick mining, approximately,	3,871,955
Number of tons produced by compressed air machines, approximately,	1,560,780
Number of tons produced by electrical machines, approximately,	171,344
Number of coke ovens,	403
Number of tons of coke produced,	151,585
Number of persons employed inside of the mines,	7,799
Number employed outside of the mines,	1,012
Number of mules in use inside of the mines,	665
Number of fatal accidents,	7
Number of tons of coal produced per each fatal accident,	800,582
Number of non-fatal accidents,	40
Number of tons of coal produced per each non-fatal accident,	140.102
Number of persons employed per each fatal accident,	1,258+
Number of persons employed per each non-fatal accident,	220+
Number of wives left widows by accidents,	4
Number of orphans,	15
Number of kegs of powder used,	24,910
Number of pounds of dynamite used,	13,731
Number of cylindrical boilers in use,	33
Number of tubular boilers in use,	100
Number of steam locomotives,	9
Number of electric motors,	5
Number of new mines opened,	23
Number of old mines abandoned,	3

TABLE A—Showing the total tonnage, number of lives lost, tons of coal produced per life lost and person injured, total number of employes and the number of employes per life lost and persons injured and the average number of tons of coal produced per employe.

Name of Companies.	Total number of tons of coal produced.	Number of lives lost.	Number of tons of coal produced per life lost.	Number of persons seriously injured.	Number of tons of coal produced per person seriously injured.	Total number of persons employed.	Number of persons employed per life lost.	Number of persons employed per person injured.	Average number of tons of coal produced per employe.
Acme Coal Mining Company,	7,413					47			
Avondale Mining and Manufacturing Company,	37,598					62			
Jos. G. Beale,	31,872					55			
Straightwell, Hibbard & Co.,	24,498					87			
Avonmore Coal and Coke Company,	101,544			2	50,772	110		55	
Allegheny Coal and Coke Company,	5,350					28			
Butts Cannel Coal Company,	27,707					75			
Keystone Coal Mining Company,	79,815			3	26,605	155		51.6	
Jos. G. Beale and Company,	42,296					66			
Braeburn Steel Company,	17,264					22			
Sharon Coal and Limestone Company,	5,259					86			
Cornell Coal Company,	34,000					105			
Filer, Sutliff and Company,	189,659					293			
J. W. Ganor,	28,627					76			
Addison Davidson,	3,510					17			
Darlington Brick and Mining Company,	5,225					12			
Jos. and M. A. Lehner,	48,290					80			
Wampum Run Coal Company,	41,510					110			
P. D. Sherwin,	53,883			2	26,941+	83		41+	
Grove Coal Company,	72,180					87			
Fairmount Coal Company,	345,693	2	172,846.5	3	115,231	574	287	191+	
F. A. Mizener,	82,995			1	82,995	175		175	
Brackenridge Coal Company,	46,500					54			
Beaver Coal and Coke Company,	65,676					160			
Lewis Coal Company,	66,163					103			
Bagdad Coal and Coke Company,	13,305			1	13,305	32		32	
Peale, Peacock and Kerr, Incorporated,	46,745					51			
Pittsburg Plate Glass Company,	350					47			
Brinker Coal and Iron Company,	18,500					60			
Cherry Run Mining Company,	22,420			2	22,420	51		51	
Carver Coal Company,	33,844					46			
W. F. Clayton,	9,182					19			
Cowansville Mining Company,	31,873					53			
Hamilton Coal Mining Company,	18,569					25			

TABLE A Continued.

Name of Companies.	Total number of tons of coal produced.	Number of lives lost.	Number of tons of coal produced per life lost.	Number of persons seriously injured.	Number of tons of coal produced per person seriously injured.	Total number of persons employed.	Number of persons employed per life lost.	Number of persons employed per person injured.	Average number of tons of coal produced per employe.
Carrier Brothers,	30,061					70			
Catfish Run Coal Company,	15,026			1	15,026	35		35	
Gilpin Coal Company,	70,765					114			
Pittsburg Coal Company,	67,978			2	33,989	110		55	
Freeport Coal Company,	10,617			1	10,617	20		20	
Haddon Coal Company,	43,707					69			
Jefferson, Clearfield Coal and Iron Company,	1,430,032	3	476,677	9	158,892+	1,640	546.6	182+	
McFetridge Brothers,	155,262					158			
Hill Coal Company, Limited,	52,154					96			
Hillville Coal and Mining Company,	2,500					37			
Hoytdale Coal Company,	8,100					15			
Hickory Coal Company, Limited,	29,448					65			
Pittsburg and Buffalo Company,	126,500			2	63,250	135		67+	
Pardoe Coal Company,	9,526					35			
Turner, Coal, Coke and Mining Company,	53,624					90			
American Sheet Steel Company,	24,264					21			
Kerr Coal Company,	59,000			1	59,000	96		96	
Lucesco Coal Company,	7,167					22			
Ben Franklin Coal Company,	15,000					28			
C. P. McCafferty,	41,200					77			
Mosgrove Coal Works,	87,748			1	87,748	136		136	
Monterey Coal Company,	36,129					96			
Pennsylvania Salt Manufacturing Company,	168,638					176			
Nellie Coal Company,	7,141					24			
Oak Ridge Mining Company,	158,675			1	158,675	268		268	
New York and Cleveland Gas Coal Company,	441,134	1	441,134	2	220,567	533	533	266	
Filer Brothers,	101,962			1	101,962	134		134	
Pine Run Coal and Coke Company,	45,884					98			
Penn Coal Company,	13,321					38			
Roaring Run Coal and Coke Company,	5,908			1	5,908	32		32	
Leechburg Coal and Coke Company,	80,381					103			
Donnelly, Dunham and Company,	70,031			4	17,507.7	126		31+	
Royle Coal Company,	16,822					3[illegible]			
George E. Tener,	46,782					92			
George G. Stage,	30,143					58			
Campbell, Lowther Coal Company,	5,288					32			

Sterling Mining Company, W. H. Warner,	16,134	......	......	......	......	108	......	......	......
Standard Coal Mining Company,	19,826	......	......	......	......	45	......	......	......
State Line Coal Company,	41,710	......	......	......	......	121	......	......	......
Sterling Coal Company,	27,385	......	......	......	......	49	......	......	......
Sligo Coal Company,	66,030	......	......	1	66,030	61	......	61	......
Mercer Iron and Coal Company,	94,903	......	......	......	......	180	......	......	......
Thompson Run Coal Company,	58,368	......	......	......	......	87	......	......	......
West Penn Mining Company,	37,490	......	......	......	......	72	......	......	......
The Wahlville Coal Company,	10,000	......	......	......	......	40	......	......	......
James S. Moore,	5,000	1	5,000	......	......	30	30	......	......
Totals and average,	5,604,079	7	800,582	40	140,102	8,811	1,258+	220+	636+

TABLE B—Classification of Accidents.

	Killed.	Injured.	Total.
By fall of coal and roof,	4	22	26
By mine cars,	3	8	11
By miscellaneous causes inside,	....	3	3
By miscellaneous causes outside,	....	7	7
Total,	7	40	47

TABLE C—Occupations of Persons Killed and Injured.

	Killed.	Injured.	Total.
Miners,	4	19	23
Drivers,	1	8	9
Loaders,	....	1	1
Machine cutters,	....	3	3
Scrappers,	....	1	1
Weighmasters,	....	2	2
Outside foreman,	1	....	1
Outside laborers,	1	3	4
Engineers,	....	1	1
Trappers,	....	1	1
Carpenters,	....	1	1
Total,	7	40	47

TABLE D—Nationalities of Persons Killed and Injured.

	Killed.	Injured.	Total.
American,	3	24	27
Germans,	....	5	5
Welsh,	1	2	3
Scotch,	....	1	1
English,	1	....	1
Poles,	2	4	6
Italians,	....	3	3
Hungarians,	....	1	1
Total,	7	40	47

TABLE—Giving the name of mine, method of haulage, kind of openings, pick or machine mine, type of machine and the power used to operate the machines in the Third Bituminous District.

Name of Mine.	Haulage.	Kind of Opening.	Pick or Machine.	Type of Machine.	Motive Power Used.	Number of Machines.
Acme,	Mule,	Drift,	Pick.			
Aladdin,	Mule,	Drift,	Pick.			
Avonmore,	Mule and rope,	Drift,	Pick.			
Anderson Run,	Mule,	Drift,	Pick.			
Avondale,	Mule,	Drift,	Pick.			
Avenue,	Mule,	Drift,	Pick.			
Annadale,	Mule,	Drift,	Pick.			
Beale,	Mule,	Drift,	Pick and machines,	Sullivan,	Compressed air,	4
Butts Cannel,	Mule,	Shaft,	Pick.			
Bagdad,	Mule,	Drift,	Pick.			
Beaver No. 2,		Drift,	Pick and machines,	Ingersol,	Compressed air,	7
Bloomington No. 9,	Mule,	Drift,	Pick and machines,	Ingersol,	Compressed air,	2
Blackstone,	Mule,	Drift,	Pick.			
Brady's Bend,	Mule and rope,	Drift,	Machines,	Jeffrey,	Electricity,	3
Braeburn,	Mule,	Drift,	Pick.			
Brackenridge,	Mule,	Drift,	Pick.			
Creighton,		Drift,	Pick and machines,	Jeffrey,	Electricity,	3
Cherry Run,	Mule and rope,	Drift,	Pick.			
Catfish Run,	Mule,	Drift,	Pick.			
Clayton,	Mule,	Drift,	Pick.			
Carver,	Mule,	Shaft,	Pick.			
Carrier,	Mule,	Drift,	Pick.			
Cowansville,	Mule,	Drift,	Pick.			
Crag Dell,	Mule,	Drift,	Pick.			
Cornell,	Mule and rope,	Slope,	Pick.			
Cheswick,						
Diamond No. 1,	Mule,	Shaft,	Pick.			
Diamond No. 2,	Mule,	Shaft,	Pick.			
Diamond (c),	Mule,	Drift,	Pick.			
Darlington,	Mule,	Drift,	Pick.			
Davidson,	Mule,	Drift,	Pick.			
Enterprise (M.),	Mule,	Shaft,	Pick.			
Enterprise (B.),	Mule,	Drift,	Pick.			
Eagle,	Mule and rope,	Drift,	Machines,	Sullivan,	Compressed air,	4
Excelsior No. 3,	Mule,	Drift,	Pick.			
Fairmount No. 1,	Mule and rope,	Drift,	Pick and machines,	Harrison, F.,	Compressed air,	11
Fairmount No. 2,	Mule and rope,	Drift,	Pick.			
Fairmount No. 4,	Mule and E. motors,	Drift,	Pick and machines,	Harrison, G. G.,	Compressed air,	15
Gilpin,	Mule,	Drift,	Pick.			
Grant,	Mule,	Drift,	Pick and machines,	Sullivan,	Compressed air,	4
Glenshaw,	Mules and rope,	Slope,	Pick.			
Hoytdale,	Mule,	Drift,	Pick.			

TABLE—Continued.

Name of Mine.	Haulage.	Kind of Opening.	Pick or Machine.	Type of Machine.	Motive Power Used.	Number of Machines.
Haddon,	Mule,	Drift,	Pick.			
Hill,	Mule and rope,	Drift,	Pick.			
Hickory,	Mule,	Shaft,	Pick.			
Hamilton,	Mule and rope,	Drift,	Pick and machines,	Harrison and Sullivan.	Compressed air,	S.—1 H.—19 } 20
Hillville,	Mule,	Drift,	Pick.			
Hites,	Mule and rope,	Drift,	Pick.			
Johnetta,	Electric motors,	Drift,	Machines,	Jeffrey & Morgan-Gardner.	Electricity,	J.—4 M. G.—1 } 5
Kerr No. 1,	Mules,	Drift,	Pick.			
Kerr No. 8,	Mule,	Drift,	Pick.			
Kirkpatrick,	Mule,	Drift,	Pick.			
Keystone (c),	Mule,	Drift,	Pick.			
Keystone No. 1 (B.),	Mule,	Drift,	Pick.			
Keystone No. 2 (B.)	Mule,	Drift,	Pick.			
Key or "K,"	Mule,	Drift,	Pick.			
Lucesco,	Mule,	Drift,	Pick.			
Monarch,	Mule,	Drift,	Machines,	Sullivan,	Compressed air,	7
Mosgrove,	Mule,	Drift,	Pick.			
Monterey,	Mule,	Drift,	Pick.			
Mizener,	Mule,	Drift,	Pick.			
Maplewood,	Mule and rope,	Drift,	Machines,	Harrison, Sullivan and Ingersol.	Compressed air,	J.—2 S.—4 H.—5 } 11
Metcalf,	Mule,	Drift,	Pick.			
Nellie,	Mule,	Slope,	Pick.			
Natrona No. 1,	Mule and rope,	Drift,	Machines,	Sullivan,	Compressed air,	9
Natrona No. 2,	Mule and rope,	Drift,	Machines,	Sullivan,	Compressed air,	8
Oak Ridge No. 3,	Mule and rope,	Drift,	Machines,	Sullivan,	Compressed air,	8
Oak Ridge No. 5,	Mule and rope,	Drift,	Pick.			
Pine Run No. 1,	Mule,	Drift,	Pick.			
Pine Run No. 2,	Mule,	Drift,	Pick.			
Penn,	Mule,	Drift,	Pick.			
Pardoe,	Mule & S. locomotive,	Drift,	Pick.			
Plum Creek,	Mule & S. locomotive,	Drift,	Pick.			
Riverview (A.),	Mule and rope,	Drift,	Pick and machines,	Sullivan,	Compressed air,	6
Riverview (W.),	Mule,	Drift,	Pick.			
Rock Point,	Mule,	Drift,	Pick.			
Rathmel,	Mule and rope,	Drift,	Machines,	Harrison and Ingersol.	Compressed air,	I.—2 H.—7 } 9
Royle,	Mule,	Drift,	Pick.			
Roaring Run,	Mule,	Drift,	Pick.			
Sterling (B.),	Mule and rope,	Drift,	Pick.			

Sterling (C.),	Mule,	Drift,	Pick.			
Sligo,	Mule and rope,	Drift,	Pick.			
State Line,	Mule and rope,	Drift,	Pick.			
Sherwin,	Mule and E. motor,	Slope,	Pick and machines,	Jeffrey,	Electricity,	2
Stage,	Mule,	Drift,	Pick.			
Stoneboro No. 3,	Mule and rope,	Slope,	Pick.			
Sherwood,	Mule and rope,	Drift,	Pick and machines,	Harrison,	Compressed air,	4
Soldier No. 1,	Mule and rope,	Drift,	Pick and machines,	Harrison and Ingersol.	Compressed air,	I.—2 H.—26 28
Soldier No. 2,	Mule and rope,	Drift,	Pick and machines,	Harrison and Ingersol.	Compressed air,	S.—2 H.—24 26
Standard (C.),	Mule,	Drift,	Pick.			
Standard (B.),	Mule,	Drift,	Pick.			
Sandy Creek,	Mule & S. locomotive,	Drift,	Pick.			
Sharon No. 1,	Mule,	Shaft,	Pick and machines,	Sullivan,	Compressed air,	2
Sharon No. 2,	Mule,	Shaft,	Pick.			
Sharon No. 3,	Mule,	Drift,	Pick.			
Sharon No. 4,	Mule,	Drift,	Pick.			
Thompson Run,	Mule and rope,	Drift,	Pick.			
Virginia,	Mule and rope,	Drift,	Pick and machines,	Harrison and Sullivan.	Compressed air,	S.—9 H.—2 11
West Penn,	Mule,	Drift,	Pick.			
Wahlville,	Miners push coal out to shaft,	Shaft,	Pick.			
Valley,	Mule,	Drift,	Pick.			

NOTE—Number of tons of coal produced by mining machines,	1,732,124
Number of machines using compressed air for power,	196
Number of machines using electricity for power,	13
Number of Harrison machines,	113
Number of Sullivan machines,	68
Number of Ingersoll machines,	15
Number of Jeffrey machines,	12
Number of Morgan-Gardner machines,	1

Highest seam of coal where machines are used about 6½ feet.
Lowest seam of coal where machines are used about 2 feet 10 inches

TABLE—Showing the method of ventilation, cubic feet of air per minute for each ventilating power, number of air splits, cubic feet of air for each split and cubic feet of air for each employe in the respective collieries of the Third Bituminous Mine District.

Name of Colliery.	Method of ventilation.	Diameter of fan in feet.	Size of furnace.	Capacity in cubic feet of air per minute of each fan or furnace.	Number of splits.	Number of cubic feet of air in each split.	Number of cubic feet of air per minute supplied to each employe.
Acme,	Furnace,	....	6x4	10,500	1	10,500	291
Aladdin,	Furnace,	....	6x4	18,000	1	18,000	450
Avonmore,	Fan,	16	....	50,000	2	20,000 30,000	644 500
Anderson Run,	Furnace,	....	5x3½	8,400	1	8,400	145
Avondale,	Furnace,	....	6x4	6,480	1	6,480	144
Annandale,	....	....	....	....	......	....	....
Allegheny,	....	....	....	....	......	....	....
Beale,	Furnace,	....	5x4	12,300	1	12,300	183
Butts Cannel,	Fan,	8	....	15,000	2	5,000 10,000	1,000 213
Bagdad,	Furnace,	....	5x3½	10,200	1	10,200	[illegible]40
Beaver No. 2,	Fan,	8	....	18,000	2	8,000 10,000	400 100
Bloomington,	Fan,	10	....	24,000	3	6,000 6,000 12,000	500 500 545
Blackstone,	Fan,	12	....	25,200	2	12,000 13,200	308 330
Brady's Bend,	Furnace,	....	6x3½	7,350	2	2,350 5,000	156 1[illegible]3
Braeburn,	Fan,	4	....	15,000	1	15,000	6[illegible]0
Brackenridge,	Furnace,	....	6x4	15,000	1	15,000	405
Cherry Run,	Furnace,	....	5x3	4,400	1	4,400	176
Catfish Run,	Furnace,	....	6x4	7,200	1	7,200	206
Clayton,	Furnace,	....	4x3	1,500	1	1,500	115
Carver,	Fan,	10	....	11,400	2	3,400 8,000	226 320
Carrier,	Fan,	4	....	10,000	1	10,000	208
Cowansville,	Furnace,	....	8x4	8,000	1	8,000	200
Crag Dell,	Furnace,	....	6x4	8,700	1	8,700	322
Cornell,	Fan,	12	....	18,000	1	18,000	600
Cheswick,	....	....	....	....	......	....	....
Diamond No. 1,	Fan,	10	....	15,000	2	7,000 8,000	140 123
Diamond No. 2,	Fan,	10	....	10,500	1	10,500	126
Diamond,	Furnace,	....	6x4	8,000	1	8,000	160
Davidson,	Furnace,	....	6x4	3,000	1	3,000	250
Darlington,	Furnace,	....	4x3	4,000	1	4,000	400
Enterprise (M.),	Fan,	6	....	8,750	2	1,750 7,000	53 100
Enterprise (B.),		....	....	....	......	....	....
Eagle,	Furnace,	....	6x4	6,600	1	6,600	110
Excelsior No. 3,	Furnace,	....	6x4	6,500	1	6,500	216
Fairmount No. 1,	(2) fans,	6 8	....	 17,500	 2	9,500 8,000	151 133
Fairmount No. 2,	Fan,	6	....	10,700	1	10,700	153
Fairmount No. 4,	Fan,	8	....	20,100	4	5,000 4,000 5,100 6,000	100 80 102 120
Gilpin,	Furnace,	....	7x5	20,000	2	10,000 10,000	200 166
Grant,	Fan,	12	....	10,000	1	10,000	166
Glenshaw,	Fan,	12	....	10,700	2	5,700 5,000	142 100
Hoytdale,	Furnace,	....	6x3½	3,700	1	3,700	231
Haddon,	Furnace,	....	5x3½	7,800	1	7,800	137
Hill,	Fan,	10	....	19,450	2	8,250 11,200	431 219
Hickory,	Fan,	10	....	10,000	1	10,000	227
Hamilton,	Two fans,	6 6	....	.... 33,000	...... 3	15,000 15,000 3,000	200 231 600
Hillville,	Furnace,	....	....	....	......	....	....
Hites,	Fan,	....	....	35,000	2	20,000 15,000	266 300
Johnetta,	Fan,	4	....	26,000	5	8,000 7,000 4,000 4,000 3,000	533 466 333 363 428
Kerr No. 1,	Furnace,	....	4½x3	3,000	1	3,000	177

Ventilation—Continued.

Name of Colliery.	Method of ventilation.	Diameter of fan in feet.	Size of furnace.	Capacity in cubic feet of air per minute of each fan or furnace.	Number of splits.	Number of cubic feet of air in each split.	Number of cubic feet of air per minute supplied to each employe.
Kerr No. 8,	Furnace, ..	....	7½x4	12,000	3	5,000	250
						4.000	210
						3,000	273
Kirkpatrick,	Furnace, ..	....	5x4	14,500	1	14,500	725
Keystone (c),	Furnace, ..	....	6x3½	5,500	1	5,500	220
Keystone No. 1 (B.),	Fan, ...	8	....	7,000	1	7,000	103
Keystone No. 2 (B.),	Furnace, ..	....	6x4	4,000	1	4,000	571
Key or "K,"	....	....	....	....	......	....	....
Lucesco,	....	....	....	....	......	....	....
Monarch,	Fan, ...	..	....	11,500	1	11,500	205
Mosgrove,	Furnace, ..	....	6x4	9,000	2	8,000	114
						1,000	100
Monterey,	Furnace, ..	....	6x4	7,300	2	4,000	114
						3,300	132
Mizener,	Furnace, ..	....	....	....	......	....	....
Maplewood,	Fan, ...	6	....	20,000	2	12,000	174
						8,000	123
Metcalf,	Furnace, ..	....	7x	....	......	....	....
Nellie,	Fan, ...	10	....	16,000	1	16.000	1,000
Natrona No. 1,	Fan, ...	16	....	18,000	2	13,500	200
						4,500	180
Natrona No. 2,	Fan, ...	12	....	27,000	1	27,000	386
Oak Ridge No. 3,	Fan, ...	6	....	13,650	2	9,650	161
						4,000	160
Oak Ridge No. 5,	Furnace,	6	....	11,500	2	6,500	108
						5,000	250
Pine Run No. 1,	Furnace, ..	....	7x5	24,000	2	12,500	595
						11,500	575
Pine Run No. 2,	Furnace, ..	....	4x3	3,900	......	3.900	177
Penn,	Furnace, ..	....	4x3	3,000	2	2,000	125
						1,000	100
Pardoe,	Fan, ...	10	....	25,000	2	15,000	214
						10,000	200
Plum Creek, ...	Furnace, ..	....	12x5	35,000	6	8,000	160
						8,100	325
						4,500	180
						5,400	216
						4,000	266
						5,000	333
Riverview,	Furnace, ..	....	7x5	20,000	2	10,000	232
						10,000	303
Riverview,	Fan, ...	16	....	15,400	1	15,400	220
Rock Point,	Furnace, ..	....	....	....	......	....	....
Rathmel,	Fan, ...	6	....	13,800	2	7,400	114
						6,400	98
Royle,	Furnace, ..	....	4½x3½	3,000	1	3,000	181
Roaring Run,	Furnace, .	....	6x4	7,300	1	7,300	270
Sterling (B.),	Furnace, .	10	....	13,500	1	13,500	241
Sterling (C.),	Furnace, ..	....	5x3½	7,500	1	7,500	167
Sligo,	Furnace, ..	....	6x4	8,400	1	8,400	233
State Line,	Fan, ...	12	....	45,000	3	20,000	444
						15,000	429
						10,000	400
Sherwin,	Fan, ...	10	....	12,000	1	12.000	240
Stage,	Furnace, ..	....	5x4	6,300	1	6,300	140
Stoneboro No. 3,	Fan, ...	10	....	14,000	2	8,000	90
						6,000	200
Sherwood,	Fan, ...	6	....	8,400	1	8,400	233
Soldier No. 1,	Two fans,	6	....	....	......	15,000	166
		25	....	40,000	3	15,000	190
			....	....	......	10,000	153
Soldier No. 2,	Fan, ...	25	....	55,000	4	24,000	212
						15,000	156
						10.000	117
						6.000	162
Standard (C.),	....	....	....	....	......	....	....
Standard (B.),	Furnace, ..	....	5x3½	5.380	......	5.380	140
Sandy Creek	Furnace, ..	....	....	18,000	......	....	....
Sharon No. 1,	Fan, ...	10	....	....	......	....	....
Sharon No. 2,	....	....	....	....	......	....	....
Sharon No. 3,	....	....	....	....	......	....	....
Sharon No. 4,	....	....	....	....	......	....	....

Ventilation—Continued.

Name of Colliery.	Method of ventilation.	Diameter of fan in feet.	Size of furnace.	Capacity in cubic feet of air per minute of each fan or furnace.	Number of splits.	Number of cubic feet of air in each split.	Number of cubic feet of air per minute supplied to each employe.
Thompson Run,	Fan,	6	....	10,880	2	8,000 2,880	118 411
Virginia,	Fan,	6	....	26,000	3	10,000 8,000 8,000	166 200 266
West Penn.	Furnace,	....	....	18,000	2	9,000 9,000	237 409
Wahlville,	Furnace,	....	5x3	4,000	1	4,000	114
Creighton,	Fan,	20	....	20,000	1	20,000	631

Names of Persons Granted Certificates of Competency of First and Second Grade Since May 5, 1893.

First grade certificates: C. H. Oakes and Harry L. Phythyon.

Second grade certificates: Alexander M. Oliver, William T. Lace, George H. Summers, John L. McNamee, Arthur V. Berry, Edward Flinn, W. G. Crawford, James Gould, H. N. McKallip, Archibald Lafferty, James Robertson, P. J. Skehan, Jacob Ashman, John Bowie, W. C. Mahood, Robert Briggs, Archie Maxwell, Nicholas Smith, John H. Young, John J. Shuttleworth, Thomas R. Wilson, Thomas Bolam, George E. Ashman, Charles W. Briggs, M. I. Bigleg, John F. Eden, Joseph H. Gray, Peter Hay, Ralph Hanford, Lewis D. Lewis, William Paterson, H. H. Moody, Alex. Skinner and Samuel Sherwin.

Descriptions of New Mines Opened During the Year 1901.

Bagdad mine is operated by the Bagdad Coal and Coke Company and is located on the West Penn Railroad, Armstrong county. This is a drift opening in which operations commenced in May. The Upper Freeport coal seam is being worked, and the product lowered from the opening to the tipple over an inclined plane 187 feet long. The mine will be worked on the single entry plan, and a small furnace has been built to ventilate it.

Cheswick mine is a shaft opening, twenty-one feet by nine and one-fourth feet and 216 feet deep. The shaft is sunk to the Lower Freeport seam which is seven and one-half feet thick, there is a slate binder nine inches thick in the center of it. The shaft is about one and one-half miles from the West Penn Railroad near Cheswick, Allegheny county, and is operated by the Allegheny Coal Company. An air shaft has been sunk two hundred feet from the main one which is ten feet by twelve feet in size. The surface water has been prevented from getting into the shafts by concrete work. The concrete which is bedded into the solid rock reaches all around the shafts to a depth of fifteen feet and is four feet wide at the main shaft and thirty inches wide at the air shaft. A pair of engines each 22"x44" manufactured by Webster, Camp & Lane of Akron, Ohio, also cone drums, have been placed in position. One Norwalk air compressor to furnish air with which to operate mining machines, four Erie tube boilers 150 H. P. each, to furnish steam. A Boyd-Porter steam pump with eight inch suction and six inch discharge; a twelve foot diameter by eight feet wide Capell fan to produce ventilation, and a modern steel tipple is being erected which will make a very modern and substantial mining plant.

The company has built twelve blocks (two houses to a block with three rooms to each house), also four blocks of eight rooms (each having two houses with four rooms to a house and eight single houses with four rooms each, all of which are for the use of the employes. The shafts have been sunk on the bottom land in a narrow valley with hills on both sides of it over one hundred feet in height, giving a covering to the coal seam of at least 300 feet in depth.

Creighton mine is a drift opening situated on the West Penn Railroad at Creighton, Allegheny county, and operated by the Pittsburg Plate Glass Company. The mine is opened on the Lower Freeport seam, which is about six feet thick. The seam has a slate band ten inches thick in the center of it. The plan adopted for working the coal is that of double entry, and pillar and room. The coal is being mined by Jeffrey mining machines with electricity as the power. A Guibal fan twenty feet in diameter and six and one-fourth feet wide has been erected for ventilating purposes. The fan running at twenty-four revolutions was producing 20,000 cubic feet of air per minute.

Allegheny mine is a drift opening situated on the West Penn Railroad operated by the Allegheny Coal and Coke Company. The product from this mine will be used at the Steel Works which are located near it. At the time of my visit there were only a few miners employed, and the ventilating arrangements were not completed.

Cornell mine is a slope opening situated on the West Penn Railroad in Allegheny county, operated by the Cornell Coal Company. It is opened on the Lower Freeport coal seam. The double entry plan of working out the coal has been adopted. There is a small quantity of explosive gas produced in the mine. A twelve foot diameter fan (Brazil type) is used for ventilation, which produced 18,000 cubic feet of air per minute.

Annandale drift has been opened on a Cannel coal seam of about thirty inches in thickness. The mine is situated on the Hilliard Branch of the Bessemer and Lake Erie Railroad, in Butler county.

The opening is connected with the tipple by an inclined plane 1,300 feet in length. The outside structures have all been very substantially built. The interior workings of the mine are in very fair condition, although the ventilating arrangements have not been completed yet.

Wahlville mine is a shallow shaft opening, situated near Evans City, Butler county. It is operated by the Wahlville Coal Company, Limited. A new shaft has just been sunk to take the place of the one now being used. It is thirteen feet by nine feet in size, and fifty feet deep. The coal seam is about three feet high, and as the roof is not being ripped down nor the floor taken up, the traveling ways and hauling roads are very low, but as soon as the hoisting arrangements are completed at the new shaft, the roof along the hauling roads will be shot down, which will increase the height. The miners at present push the coal in small wagons to the bottom of the shaft. The mine is ventilated by means of a small furnace. I measured about 5,400 cubic feet of air in circulation and the mine is in very fair condition.

Buhl Nos. 3 and 4 mines are drift openings. I did not visit these mines as the railroad to them is not yet completed. They will be operated by the Sharon Coal and Limestone Company.

Buhl No. 2 mine is a shaft opening seventy-eight feet deep and eighteen feet by eight feet (inside of timbers) in size, and is on the "A" or Brookville seam, which is four feet in thickness. At the time of my visit the workmen were busy cutting out the shaft bottom, and making room for the partings, etc. This operation is located on a new branch railroad of the Western New York and Pennsylvania Railroad of the Pennsylvania Company in Lawrence county. It is operated by the Sharon Coal and Limestone Company.

Buhl No. 1 mine is located on the same railroad as that of No. 2 mine, but is in Mercer county. The Sharon Coal and Limestone Company operates it. This is a shaft opening 115 feet deep and 18′x8′ in size, and is on the "A" or Brookville coal seam from three feet six inches to four feet in thickness. The coal is hoisted by Duplex engines with cylinders 12″x18″. An automatic dumping cage has also been erected. The shaft head frame is about sixty feet high and it is built in a substantial manner. The ventilation is produced by a Brazil fan ten feet in diameter. Mine in good condition.

The "K" mine which is operated by Filer Brothers is a drift, on the "A" or Brookville coal seam, which is about five feet six inches in height. The mine is situated on the Bessemer and Lake Erie Railroad at Pardoe, Mercer county. The method of working out the coal is the single entry plan. The ventilating air shaft has been sunk, but the ventilating fan had not been erected at the date of my last visit. The volume of air circulating in the mine was not sufficient.

The Roaring Run mine is a drift opening, situated on the West Penn Railroad, operated by the Roaring Run Coal and Coke Company. The opening is connected with the tipple by an inclined plane. The coal is the Upper Freeport seam which is about three feet six inches in height. The mine is worked partially on the double entry plan. A six foot furnace produces the ventilation. The mine was in very fair condition. I measured 9,200 cubic feet of air per minute.

The Pine Run No. 2 mine is a new drift opening operated by the Pine Run Coal and Coke Company, situated on the West Penn Railroad in Westmoreland county. The mine is ventilated by a small furnace.

The Valley mine is a drift opening situated on the West Penn Railroad in Westmoreland county, and is operated by the Valley Coal Company. No coal had been shipped up to the end of the year 1901, but will begin shipping coal during the month of January, 1902.

Anderson Run mine was opened during the year, and began to ship coal April 16, 1901. This drift opening is situated on the Low Grade Division of the Buffalo and Allegheny Valley Railroad in Jefferson county. The distance between the mine opening and the tipple is one and one-half miles, and a fifteen ton steam locomotive brings the coal forward to the tipple. The grades (at some points as high at ten per cent.) on this locomotive road are very heavy. The Lower Freeport seam is being mined and the coal is being worked out on the double entry plan. The ventilation is produced by a six foot furnace and I measured 8,400 cubic feet of air circulating through the working places of the mine.

The Davidson mine situated at Beaver Falls, Beaver county, is an old opening which has not been operated under the mining law for years, but the lawful number of miners are employed in it now.

The Acme mine after being idle for some years and which was stricken from the list of active mines, has again resumed operations under the control of a different company, known as the Acme Coal Mining Company. Since the new company have taken charge of the property extensive improvements have been made in the interior of the mine.

Hillville mine is situated on the Buffalo and Allegheny Valley Railroad in Clarion county, and is operated by the Hillville Coal and Mining Company. The coal from this drift opening is conveyed to the tipple over two inclined planes. A ventilating shaft sixty feet deep and seven feet in diameter has been sunk, but the ventilating furnace had not been built at the time of my visit.

Description of Old Mines Situated in Allegheny County on the P. & W. and West Penn Railroads.

Glenshaw mine was not ventilated as well as it should have been. I measured 10,700 cubic feet of air in circulation in the mine, which was split into two currents about equally divided, which was inefficient, not being strong enough at the face of the workings.

In the Hites mine I measured 33,000 cubic feet of air, which was ample had it been properly distributed to the face of the workings. Some of the air currents were so weakened by leakage before they reached the face of the entries that their velocity was too much reduced to afford efficient ventilation. Explosive gas is being produced in small quantities at the face of two of the entries.

At the Natrona No. 1 mine the ventilation and drainage was very good, and I measured 24,000 cubic feet of air per minute in circulation. At the Natrona No. 2 mine I measured 27,000 cubic feet of air being produced by the ventilator but there was practically no circulation at the face of the interior workings. Since my visit I have been informed that the defects noted have all been remedied, and that the mine is now well ventilated.

The Brackenridge mine was not sufficiently ventilated at the face of the workings. There was a sufficient volume of air at the ventilating furnace but one-half of it was lost by leakage before it reached the inner portion of the mine.

Mines Situated on the West Penn Railroad in Butler, Armstrong and Westmoreland Counties.

Kerr No. 1 mine was not very well ventilated on last visit owing, in a large measure, to no fire being in the ventilating furnace and some of the air courses having been neglected. The mine foreman had quit the service of the company the day before my visit, which might have been the cause of no fire being in the furnace. The other mines, Kerr No. 8, Avonmore, Beale, Haddon, Gilpin, Blackstone, Kirkpatrick, West Penn, Riverview, Pine Run No. 1, were all in splendid condition, both as regards ventilation and drainage. At the Kerr No. 8 an air shaft sixty-five feet deep has been sunk and a furnace seven and one-half feet by four feet has been built during the year. A new seven foot furnace has been built and an air shaft eighty-five feet deep has been sunk at the West Penn mine and a twelve foot diameter ventilating fan has been erected at the Blackstone mine during the year.

Mines Situated on the Buffalo and Allegheny Valley Railroad.

The Sandy Creek mine was not properly ventilated. The total volume of air being produced by the furnace was 18,000 cubic feet per minute. The system adopted of distributing the air to the face of the workings was very faulty. This was caused by having too many openings to day light, thereby having too many splits rendering the currents too weak for efficient ventilation.

In the Plum Creek mine I measured 40,800 cubic feet of air per minute in circulation, which was sufficient, but owing to the mine having so many openings to the surface the mine foreman had not proper control of the different air currents, hence the distribution of the air was defective.

At the Lucesco mine the ventilation was not very good, owing to no ventilating power having been provided yet. The company has agreed to erect a fan at this mine at once, so as to have it ventilated according to law.

At the Riverview mine although there was an abundance of air being produced by the fan, it had been somewhat neglected by the mine foreman and as a result the mine was not as well ventilated as it should have been. Also the Eagle mine was not as efficiently ventilated as it should have been. The other mines, viz: Crag Dell, Braeburn, Metcalf, Aladdin, Johnetta, Mosgrove, Monarch, Bradys Bend, Catfish Run and Monterey, were in very good condition. They were well ventilated and drained. At the Johnetta mine a new four foot Capell fan has been erected. The fan is driven by electricity. Two electric motors haul the coal from the workings to the tipple. At the Mosgrove mine a new tipple, Mitchell dump and a double tracked inclined plane have been built during the year.

Mines Situated Along the Low Grade Division and Sligo Branch of the Buffalo and Allegheny Valley Railroad.

The Carrier, Oak Ridge Nos. 3 and 5, Avondale, Diamond, Sligo, Sterling and Fairmount No. 4 mines were reasonably well ventilated and drained. At the Cherry Run mine the air current was not strong enough at the face of some of the entries. The Standard mine was insufficiently ventilated, but the officials promised to erect a ventilating fan or furnace without delay. At my last visit to the Fairmount mines especially Nos. 1 and 2, the air in circulation in the workings was not adequate, but since I last inspected them an opening has been made to day light at the extreme end of the workings in No. 1 mine, which has improved the ventilation wonderfully as I am informed.

Mines Situated in the Reynoldsville Region.

The Bloomington, Virginia, Hamilton and Rathmel were reasonably well ventilated and drained. The drainage at the face of some of the workings in Sherwood mine was poor. The ventilating currents had not sufficient velocity at the face of the workings in the Maplewood mine. The Soldier Nos. 1 and 2 mines, with the exceptions of a few entries, were reasonably well ventilated.

Mines Situated in Beaver and Lawrence Counties.

The Beaver No. 2, Excelsior No. 3, Thompson Run, Clayton and Butts Cannel mines were all in good condition when I last inspected them. At the Rock Point mine all of the coal has been exhausted, but a new drift mine has been opened on a new property near the exhausted one. The ventilation in the new works was not very good owing to the ventilating power not having been erected. The air shaft was sunk at my last visit and a furnace has been built since I made my last inspection. Little or no work has been done at the State Line and Sterling mines during the year owing to a protracted strike among the miners, hence the mines have not been examined during the year. A new haulage plant (rope system) with gasoline as the power has been installed at the Thompson Run mine during the year.

Mines Located Along the Bessemer and Lake Erie Railroad and in Other Parts of Mercer and Butler Counties.

The Enterprise mine in Butler county, Sherwin, Grant, Stage, Mizener, Nellie, Royle, Pardon, Hill, Hickory, Carver, Diamond Nos. 1 and 2, and Stoneboro No. 3 mines were all fairly well ventilated, except that the air currents in Nos. 1 and 2 Diamond were too weak at some of the workings. A new air shaft has been sunk at the face of the workings of the Pardoe mine. A good stairway has been placed in this shaft for the miners. The Enterprise mine in Mercer county was not sufficiently ventilated at the face of the workings. The drainage was defective, but a deep ditch is being cut from the bottom of the shaft to near the face of the workings so as to relieve them of a large body of water produced there. At the Grant mine a twelve foot diameter fan has been erected during the year.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Third Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Acme Coal Mining Co.						
Acme,	Clarion,	H. C. Burket,	Greensburg,	J. P. Woodmansee,	Rimersburg,	Sligo Branch of L. G. Div. of B. & A. V.
Avondale Mining & Mfg. Co.						
Avondale,	Clarion,	H. C. Burket,	Greensburg,	J. P. Woodmansee,	Rimersburg,	Low Grade Div. of Buffalo & Allegheny Valley.
Joseph G. Beale.						
Aladdin,	Armstrong,	Jos. G. Beale,	Leechburg,	E. H. Beale,	Leechburg,	Buffalo & Allegheny Valley.
Straightwell, Hibbard & Co.						
Anderson Run,	Jefferson,			D. M. Straightwell,	Camp Run,	Buffalo & Allegheny Valley.
Avonmore Coal & Coke Co.						
Avonmore,	Armstrong,			L. W. Hicks,	Leechburg,	West Penn.
Allegheny Coal & Coke Co.						
Avenue,	Allegheny,	N. S. Hicks,		Robt. D. Crawford,	Leechburg,	West Penn.
Butts Cannel Coal Co.						
Butts-Cannel,	Beaver,			George Gould,	E. Palestine, O.,	P., Ft. Wayne & Chicago.
Annandale,	Butler,			George Gould,	E. Palestine, O.,	Hilliard Branch of Bessemer & Lake Erie.
Keystone Coal Mining Co.						
Brady's Bend,	Armstrong,	Geo. E. Henry,	East Brady,	John Henry,	East Brady,	Buffalo & Allegheny Valley.
Keystone,	Clarion,	Geo. E. Henry,	East Brady,	John Henry,	East Brady,	Sligo Branch of L. G. Div. of B. & A. V.
Jos. G. Beale & Co.						
Beale,	Armstrong,	Jos. G. Beale,	Leechburg,	Harry W. Beale,	Leechburg,	West Penn.
Braeburn Steel Co.						
Braeburn,	Westmoreland,			Wm. Beane,	Braeburn,	Buffalo & Allegheny Valley.
Sharon Coal & Limestone Company.						
Buhl No. 1,	Mercer,	F. P. Filer,	Mercer,	Peter Hay,	Volant,	W. N. Y. & P.
Buhl No. 2,	Lawrence,	F. P. Filer,	Mercer,	C. H. Oakes,	Leesburg,	W. N. Y. & P.
Buhl No. 3,	Butler,	F. P. Filer,	Mercer,	M. W. Jenkins,	Grove City,	W. N. Y. & P.
Buhl No. 4,	Butler,	F. P. Filer,	Mercer,	M. W. Jenkins,	Grove City,	W. N. Y. & P.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Brackenridge Coal Co. Brackenridge,	Allegheny,	N. S. Hicks,	Leechburg,	N. S. Hicks,	Leechburg,	West Penn.
Beaver Coal and Coke Co. Beaver No. 2,	Lawrence,			H. K. Hartsuff, Jr.	Wampum,	Erie and Pittsburg.
Lewis Coal Company. Blackstone,	Westmoreland,	Alfred Hicks,	Leechburg,	N. S. Hicks,	Leechburg,	West Penn.
Bagdad Coal and Coke Co. Bagdad,	Armstrong,	Alfred Hicks,	Leechburg,	N. S. Hicks,	Leechburg,	West Penn.
Peale, Peacock & Kerr, Inc. Bloomington No. 9,	Jefferson,	Alex. Dunsmore,	Glen Richey,	George Snedden,	Rathmel,	Falls Creek & Reynoldsville R. R.
Pittsburg Plate Glass Co. Creighton,	Allegheny,	J. I. Johnston,	Charleroi,	J. K. Johnston,	Charleroi,	West Penn.
Cherry Run Mining Co. Cherry Run,	Clarion,	Chas. Andrews,	Elmira, N. Y.,	E. N. Miller,	Huey,	Sligo Branch of L. G. Div. of B. & A. V.
Carver Coal Company. Carver,	Mercer,	Robt. P. Cann,	Stoneboro,	George Young,	Stoneboro,	L. S. & M. S.
W. F. Clayton. Clayton,	Beaver,			W. F. Clayton,	Beaver Falls,	
Cowansville Mining Co. Cowansville,	Armstrong,			Anthony Smith,	Cowansville,	B. R. & P.
Hamilton Coal Mining Co. Crag Dell,	Westmoreland,	B. F. Sprankle,	Tarentum,	H. W. Boyd,	Tarentum,	Buffalo & Allegheny Valley.
Carrier Brothers. Carrier,	Jefferson,			C. E. Carrier,	Summerville,	Low Grade Div. of Buffalo & A. V.
Catfish Run Coal Co. Catfish Run,	Clarion,	C. J. McTighe,	Catfish,	C. J. McTighe,	Catfish,	Buffalo & Allegheny Valley.
Cornell Coal Company. Cornell,	Allegheny,			W. A. Iseman,	Hite,	West Penn.

Filer, Sutliff & Co.						
Diamond No. 1,	Mercer,	Enoch Filer,	Sharon,	F. P. Filer,	Mercer,	Bessemer & Lake Erie.
Diamond No. 2,	Mercer,	Enoch Filer,	Sharon,	F. P. Filer,	Mercer,	Bessemer & Lake Erie.
J. W. Ganoe.						
Diamond,	Clarion,			J. W. Ganoe,	Phillipston,	Sligo Branch of Low Grade Div. of B. & A. V.
Addison Davidson.						
Davidson,	Beaver,			Addison Davidson,	Beaver Falls,	
Darlington Brick & Mining Company.						
Darlington,	Beaver,			J. H. Warwood,	Darlington,	Pitts., Marion & Chicago Ry.
Jos. & M. A. Lehner.						
Eagle,	Clarion,			Joseph Lehner,	East Brady,	Buffalo & Allegheny Valley.
Wampum Run Coal Co.						
Excelsior No. 3,	Lawrence,	Matthew Gunton,	Wampum,	Chas. M. Harvey,	Wampum,	Erie & Pittsburg.
P. D. Sherwin.						
Enterprise,	Butler,	P. D. Sherwin,	Karns City,			P. & W.
Sherwin,	Butler,	P. D. Sherwin,	Karns City,	Samuel Sherwin,	Sherwin,	Bessemer & Lake Erie.
Grove Coal Company.						
Enterprise,	Mercer,	J. V. Morris,	Cleveland, O.,	D. D. Morris,	Grove City,	Bessemer & Lake Erie.
Fairmount Coal Co.						
Fairmount No. 1,	Armstrong,	E. C. Roberts,	Buffalo, N. Y.,	S. Tagtor Sheaffer,	New Bethlehem,	Low Grade Div. of Buffalo & Allegheny Valley.
Fairmount No. 2,	Armstrong,	E. C. Roberts,	Buffalo, N. Y.,	S. Tagtor Sheaffer,	New Bethlehem,	Low Grade Div. of Buffalo & Allegheny Valley.
Fairmount No. 4,	Armstrong,	E. C. Roberts,	Buffalo, N. Y.,	S. Tagtor Sheaffer,	New Bethlehem,	Low Grade Div. of Buffalo & Allegheny Valley.
Freeport Coal Co.						
Freeport,	Allegheny,			N. S. Hicks,	Leechburg,	West Penn.
F. A. Mizener.						
Grant,	Butler,					Bessemer & Lake Erie.
Mizener,	Butler,					Bessemer & Lake Erie.
Gilpin Coal Company.						
Gilpin,	Armstrong,			N. S. Hicks,	Leechburg,	West Penn.
Pittsburg Coal Co.						
Glenshaw,	Allegheny,	Geo. W. Schluederberg,	Pittsburgh,			P. & W.
Haddon Coal Company.						
Haddon,	Armstrong,	Alfred Hicks,	Leechburg,	N. S. Hicks,	Leechburg,	West Penn.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Jefferson, Clearfield Coal and Iron Co.						
Hamilton,	Jefferson,	L. W. Robinson,	Punxsutawney,	John Reed,	Reynoldsville,	Falls Creek and Reynoldsville R. R.
Soldier No. 1,	Jefferson,	L. W. Robinson,	Punxsutawney,	John Reed,	Reynoldsville,	Falls Creek and Reynoldsville R. R.
Soldier No. 2,	Jefferson,	L. W. Robinson,	Punxsutawney,	John Reed,	Reynoldsville,	Falls Creek and Reynoldsville R. R.
Maplewood,	Jefferson,	L. W. Robinson,	Punxsutawney,	John Reed,	Reynoldsville,	Falls Creek and Reynoldsville R. R.
Rathmel,	Jefferson,	L. W. Robinson,	Punxsutawney,	John Reed,	Reynoldsville,	Falls Creek and Reynoldsville R. R.
Sherwood,	Jefferson,	L. W. Robinson,	Punxsutawney,	John Reed,	Reynoldsville,	Falls Creek and Reynoldsville R. R.
Virginia,	Jefferson,	L. W. Robinson,	Punxsutawney,	John Reed,	Reynoldsville,	Falls Creek and Reynoldsville R. R.
McFetridge Brothers.						
Hites or McFetridge Bros. No. 1,	Allegheny,			G. H. McFetridge,	Hites,	West Penn.
Hites or McFetridge Bros. No. 2,	Allegheny,			G. H. McFetridge,	Hites,	West Penn.
Hill Coal Company, Limited.						
Hill,	Mercer,			William Jenkins,	Jackson Centre,	W. N. Y. & P.
Hillville Coal & Mining Co.						
Hillville,	Clarion,			P. A. Stewart,	West Monterey,	Buffalo & Allegheny Valley.
Hoytdale Coal Co.						
Hoytdale,	Beaver,			F. S. Hoyt,	New Castle,	Erie & Pittsburg.
Hickory Coal Co. Limited.						
Hickory,	Mercer,	Joseph Davis,	Youngstown, O.	Hugh Evans,	Bowie,	W. N. Y. & P.
Pittsburg & Buffalo Co.						
Johnetta,	Armstrong,	Harry P. Jones,	Johnetta,	John Phillips,	Johnetta,	Buffalo & Allegheny Valley.
Pardoe Coal Company.						
"K,"	Mercer,			E. L. Filer,	Pardoe,	Bessemer & Lake Erie.
Turner Coal, Coke & Mining Co.						
Keystone Nos 1 and 2,	Butler,	J. L. Turner,	Ferris,			Hilliard Branch of Bessemer & Lake Erie.

American Sheet Steel Co.						
Kirkpatrick,	Armstrong,	S. A. Davis,	Vandergrift,	Oscar Lendquest,	Leechburg,	
Kerr Coal Co.						
Kerr No. 1,	Armstrong,	G. B. Findley,	Freeport,	M. C. Kerr,	Freeport,	
Kerr No. 2,	Butler,	G. B. Findley,	Freeport,	M. C. Kerr,	Freeport,	West Penn.
Lucesco Coal Co.						
Lucesco,	Westmoreland,			J. H. Patton,	Greensburg,	Buffalo & Allegheny Valley.
Ben Franklin Coal Co.						
Metcalf,	Westmoreland,	G. B. Findley,	Freeport,	M. C. Kerr,	Freeport,	Buffalo & Allegheny Valley.
C. P. McCafferty.						
Monarch,	Clarion,			C. P. McCafferty,	East Brady,	Buffalo & Allegheny Valley.
Mosgrove Coal Works.						
Mosgrove,	Armstrong,			Wm. L. Affelden,	Mosgrove,	Buffalo & Allegheny Valley.
Monterey Coal Co.						
Monterey,	Clarion,			A. J. Watson,	West Monterey,	Buffalo & Allegheny Valley.
Penna. Salt Mfg. Co.						
Natrona Nos. 1 and 2,	Allegheny,	E. E. Armstrong,	Natrona,	James Boustead,	Natrona,	West Penn.
Nellie Coal Co.						
Nellie,	Butler,			C. B. McFarland,	Argentine,	Hilliard Branch of Bessemer & Lake Erie.
Oak Ridge Mining Co.						
Oak Ridge Nos. 3 and 5,	Armstrong,			Henry Williams,	Oak Ridge,	Low Grade Div. of Buffalo & Allegheny Valley.
N. Y. & Cleveland Gas Coal Co.						
Plum Creek,	Allegheny,			Hugh Dunning,	Unity,	Plum Creek Branch of Buffalo & A. V.
Sandy Creek,	Allegheny,			Wm. Fisher,	White Ash,	Sandy Creek Branch of Buffalo & A. V.
Filer Brothers.						
Pardoe,	Mercer,			E. L. Filer,	Pardoe,	Bessemer & Lake Erie.
Pine Run Coal & Coke Co.						
Pine Run Nos. 1 and 2,	Westmoreland,			L. W. Hicks,	Leechburg,	West Penn.
Penn Coal Co.						
Penn,	Lawrence,	Edwin N. Ohl,	New Castle,			W. N. Y. & P.
Roaring Run Coal & Coke Company.						
Roaring Run,	Westmoreland,	J. L. McKeever,	Irwin,	John S. McKeever,	Apollo,	West Penn.
Leechburg Coal & Coke Co.						
Riverview,	Westmoreland,	Alfred Hicks,	Leechburg,	N. S. Hicks,	Leechburg,	West Penn.
Donnelly, Dunham & Co.						
Riverview,	Armstrong,	W. J. Dunham,	Buffalo, N. Y.,	John Doyle,	Cosmus,	Buffalo & Allegheny Valley.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Royle Coal Co. Royle,	Butler,			R. E. Royle,	Hilliard,	Hilliard Branch of Bessemer & Lake Erie.
George E. Tener. Rock Point,	Lawrence,			Wm. Brown,	Wampum,	P. & W.
George G. Stage. Stage,	Butler,	Geo. G. Stage,	Greenville,	James Welsh,	Coaltown,	Bessemer & Lake Erie.
Campbell, Lowther Coal Co. Standard,	Clarion,	Thos. S. Lowther,	Helvetia,	John D. Lowther,	Rimersburg,	Sligo Branch of L. G. Div. of B. & A. V.
Sterling Mining Co. or W. H. Warner. Sterling,	Beaver,	W. H. Warner,	Cleveland, O.,	John Hileman,	Washingtonville,	Pitts., Marion & Chicago Ry.
Standard Coal Mining Co. Standard,	Butler,			Harry Hamilton,	Argentine,	Hilliard Branch of Bessemer & Lake Erie.
State Line Coal Co. State Line,	Beaver,	W. J. Mullins,	Wooster, O.,	Hugh Laughlin,	East Palestine,	Pitts., Ft. Wayne & Chicago.
Sterling Coal Co., Sterling,	Clarion,	Geo. E. Henry,	East Brady,	Peter Henry,	East Brady,	Sligo Branch of L. G. Div. of B. & A. V.
Sligo Coal Co. Sligo,	Clarion,			H. F. Miller,	Huey,	Sligo Branch of L. G. Div. of B. & A. V.
Mercer Iron and Coal Co. Stoneboro Nos. 2 and 3,	Mercer,	Robt. P. McCann,	Stoneboro,	B. F. Esgar,	Stoneboro,	L. S. & M. S.
Thompson Run Coal Co. Thompson Run,	Beaver,			F. H. Douthett,	Kimberly,	Pittsburgh & Lake Erie.
West Penn Mining Co. West Penn,	Westmoreland,			L. W. Hicks,	Leechburg,	West Penn.
Wahlville Coal Co. Wahlville Nos. 1 and 2,	Butler,			A. R. Wahl,	Evans City,	B. R. & P.

TABLE II—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Third Bituminous District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds dynamite used.	Number horses and mules.
Acme Coal Mining Co.														
Acme,	Clarion,	7,413			7,413			56	47					7
Avondale Mining and Mfg. Co.														
Avondale,	Clarion,	37,484		114	37,598			236	62					7
Jos. G. Beale.														
Aladdin,	Armstrong,	31,702	70	100	31,872			207	55			260	100	2
Straightwell, Hibbard & Co.														
Anderson Run,	Jefferson,	24,248	150	100	24,498			152	87			300		4
Avonmore Coal & Coke Co.														
Avonmore,	Armstrong,	101,394	150		101,544			281	110		2			9
Allegheny Coal and Coke Co.														
Avenue,	Allegheny,	5,350			5,350			103	28			110	50	2
Butts Cannel Coal Co.														
Annandale,	Butler,	826			826			60	12					1
Butts Cannel shaft,	Beaver,	25,806	1,075		26,881			216.25	63			125		3
Total,		26,632	1,075		27,707			138.12	75			125		4
Keystone Coal Mining Co.														
Brady's Bend,	Armstrong,	59,342	450		59,792			259	116		3	150	50	7
Keystone,	Clarion,	19,898		125	20,023			225	39			50		3
Total,		79,240	450	125	79,815			242	155		3	200	50	10

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TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds dynamite used.	Number horses and mules.
Joseph G. Beale and Company.														
Beale,	Armstrong,	41,777	434	85	42,296	....	....	231.50	66	......	......	804	....	3
Braeburn Steel Company.														
Braeburn,	Westmoreland,	....	17,264	....	17,264	....	....	308	22	......	......	....	....	2
Sharon Coal and Limestone Co.														
Buhl No. 1,	Mercer,	2,203	1,248	417	3,868	....	....	301	34	......	......	105	650	2
Buhl No. 2,	Lawrence,	....	1,013	187	1,200	....	....	185	35	......	......	....	250	....
Buhl No. 3,	Butler,	....	....	191	191	....	....	200	10	......	......	40	50	....
Buhl No. 4,	Butler,	....	....	....	....	....	....	134	7	......	......	....	....	....
Total,	....	2,203	2,261	795	5,259	....	....	205	86	......	......	145	950	2
Brackenridge Coal Co.														
Brackenridge,	Allegheny,	10,000	....	36,500	46,500	....	....	309	54	......	......	709	....	4
Beaver Coal and Coke Company.														
Beaver No. 2,	Lawrence,	62,176	....	3,500	65,676	....	....	273	160	......	......	....	....	7
Lewis Coal Company.														
Blackstone,	Westmoreland,	65,963	200	....	66,163	....	....	258	103	......	......	628	....	7
Bagdad Coal and Coke Company.														
Bagdad,	Armstrong,	13,305	....	....	13,305	....	....	140	32	......	1	90	....	2
Peale, Peacock & Kerr, Inc.														
Bloomington No. 9,	Jefferson,	45,208	1,500	37	46,745	....	....	108	51	......	......	528	12	10
Brinker Coal and Iron Company.														
Brinker,	Clarion,	18,000	500	....	18,500	....	....	112	60	......	......	....	....	5

Pittsburg Plate Glass Company.														
Creighton,	Allegheny,	320	....	30	350	....	....	16	47	......	......	10	....	....
Cherry Run Mining Company.														
Cherry Run,	Clarion,	22,270	100	50	22,420	....	....	170	51	......	1	100	200	3
Carver Coal Company.														
Carver,	Mercer,	27,842	5,252	750	33,844	....	....	230	46	......	......	240	....	4
W. F. Clayton.														
Clayton,	Beaver,	....	40	9,142	9,182	....	....	297	19	......	......	40	....	3
Cowansville Mining Company.														
Cowansville,	Armstrong,	31,473	100	300	31,873	....	....	223	53	......	......	350	....	3
Hamilton Coal Mining Company.														
Crag Dell,	Westmoreland,	18,269	200	100	18,569	....	....	239	25	......	......	350	....	4
Carrier Brothers.														
Carrier,	Jefferson,	29,661	250	150	30,061	....	....	270	70	......	......	500	2,000	7
Catfish Run Coal Company.														
Catfish Run,	Clarion,	14,936	40	50	15,026	....	....	240	35	......	1	110	50	6
Cornell Coal Company.														
Cornell,	Allegheny,	24,000	1,000	9,000	34,000	....	....	254	105	......	......	1,000	300	8
Filer, Sutliff and Company.														
Diamond No. 1,	Mercer,	101,068	4,100	1,300	106,468	....	....	261	162	......	......	700	....	8
Diamond No. 2,	Mercer,	79,241	2,600	1,350	83,191	....	....	259	131	......	......	466	....	5
Total,	....	180,309	6,700	2,650	189,659	....	....	2 0	293	......	......	1,1 6	....	13
J. W. Ganoe.														
Diamond,	Clarion,	28,527	....	100	28,627	....	....	136	76	......	......	240	....	5
Addison Davidson.														
Davidson,	Beaver,	....	....	3,510	3,510	....	....	266	17	......	......	3	7	1
Darlington Brick and Mining Co.														
Darlington,	Beaver,	....	5,225	....	5,225	....	....	289	12	......	......	....	....	2
Jos. and M. A. Lehner.														
Eagle,	Clarion,	46,908	1,382	....	48,290	....	....	230	80	......	......	....	....	4
Wampum Run Coal Company.														
Excelsior No. 3,	Lawrence,	41,260	200	50	41,510	....	....	268	110	......	......	250	200	9
P. D. Sherwin.														
Sherwin,	Butler,	36,000	135	400	36,535	....	....	276	60	......	......	....	1,500	3
Enterprise,	Butler,	16,418	....	930	17,348	....	....	292	23	......	2	200	....	1
Total,	....	52,418	[illegible]	1,330	53,883	....	....	[illegible]	83	......	2	200	1,500	4

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds dynamite used.	Number horses and mules.
Grove Coal Company.														
Enterprise,	Mercer,	65,756	5,840	584	72,180	....	....	234	87	......	......	426	....	6
Fairmount Coal Company.														
Fairmount No. 1,	Armstrong,	154,659	....	254	154,913	....	....	274	235	1	......	2,100	....	20
Fairmount No. 2,	Armstrong,	52,909	3,692	....	56,601	....	....	285	97	......	......	750	....	7
Fairmount No. 4,	Armstrong,	130,771	3,408	....	134,179	....	....	249	242	1	3	1,900	....	18
Total,	....	338,339	7,100	254	345,693	....	....	269.33	574	2	3	4,750	....	45
F. A. Mizener.														
Mizener,	Butler,	44,206	62	527	44,795	....	....	273.25	90	......	......	250	....	8
Grant,	Butler,	37,821	341	38	38,200	....	....	277.50	85	......	1	....	2,500	4
Total,	....	82,027	403	565	82,995	....	....	275.37	175	......	1	250	2,500	12
Gilpin Coal Company.														
Gilpin,	Armstrong,	70,765	....	....	70,765	....	....	256	114	......	......	....	....	5
Pittsburg Coal Company.														
Glenshaw,	Allegheny,	66,602	910	466	67,978	....	....	270.50	110	......	2	....	....	13
Freeport Coal Company.														
Freeport,	Allegheny,	10,617	....	....	10,617	....	....	200	20	......	1	80	....	1
Haddon Coal Company.														
Haddon,	Armstrong,	43,607	100	....	43,707	....	....	247	69	......	......	415	....	4

Jefferson, Clearfield Coal and Iron Company.													
Hamilton,	Jefferson,	*949,038	15,000	....	964,038	145,585	393	264	153	2	......	....	....	18
Soldier No. 1,								264	618	1	4	....	....	45
Soldier No. 2,								264	281	......	4	....	....	27
Maplewood,	Jefferson,	139,562	4,000	....	143,562	....	....	203	184	......	......	....	....	10
Rathmel,	Jefferson,	125,944	2,500	....	128,444	....	....	188	170	......	1	....	....	10
Sherwood,	Jefferson,	47,761	1,000	....	48,761	....	....	191	42	......	......	....	....	3
Virginia,	Jefferson,	143,727	1,500	....	145,227	....	....	210	192	......	......	....	....	10
Total,	....	1,406,032	24,000	....	1,430,032	145,585	393	226.28	1,640	3	9	....	....	123
McFetridge Brothers.													
Hites or McFetridge Bros. No. 1,	Allegheny,	141,551	2,464	5,700	149,715	....	....	289	143	......	......	1,452	....	17
Hites or McFetridge Bros. No. 2,	Allegheny,	....	....	5,547	5,547	....	....	107	15	......	......	48	....	2
Total,	....	141,551	2,464	11,247	155,262	....	....	198	158	......	......	1,500	....	19
Hill Coal Company, Limited.													
Hill,	Mercer,	50,154	1,000	1,000	52,154	....	....	227.50	96	......	......	100	50	5
Hillville Coal and Mining Co.													
Hillville,	Clarion,	2,450	....	50	2,500	....	....	54	37	......	......	....	....	2
Hoytdale Coal Company.													
Hoytdale,	Beaver,	8,000	75	25	8,100	....	....	199	15	......	......	....	....	3
Hickory Coal Company, Limited.													
Hickory,	Mercer,	27,250	762	1,436	29,448	....	....	252	65	......	......	....	....	5
Pittsburg and Buffalo Company.													
Johnetta,	Armstrong,	115,000	3,000	8,500	126,500	6,000	10	298	135	......	......	290	300	....
Pardoe Coal Company.													
"K,"	Mercer,	9,426	....	100	9,526	....	....	125	35	......	2	50	100	3
Turner Coal, Coke & Mining Co.													
Keystone No. 1,	Butler,	50,911	350	130	51,391	....	....	226.50	82	......	......	280	10	10
Keystone No. 2,	Butler,	2,180	30	23	2,233	....	....	159.50	8	......	......	21	....	1
Total,	....	53,091	380	153	53,624	....	....	193	90	......	......	301	10	11
American Sheet Steel Company.													
Kirkpatrick,	Armstrong,	....	80	24,184	24,264	....	....	303	21	......	......	330	....	2
Kerr Coal Company.													
Kerr No. 1,	Armstrong,	....	....	9,000	9,000	....	....	260	14	......	......	120	....	1
Kerr No. 8,	Butler,	50,000	....	....	50,000	....	....	262	82	......	1	700	50	5
Total,	....	50,000	....	9,000	59,000	....	....	261	96	......	1	820	50	6
Lucesco Coal Company.													
Lucesco,	Westmoreland,	7,167	....	....	7,167	....	....	243	22	......	......	....	....	2

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds dynamite used.	Number horses and mules.
Ben Franklin Coal Company.														
Metcalf,	Westmoreland,	15,000	.....	.....	15,000	.....	.....	260	28	.....	.....	225	.....	2
C. P. McCafferty.														
Monarch,	Clarion,	40,000	1,200	.....	41,200	.....	.....	171	77	.....	.....	.....	.....	7
Mosgrove Coal Works.														
Mosgrove,	Armstrong,	87,626	122	.....	87,748	.....	.....	207.4	136	.....	1	600	1,500	11
Monterey Coal Company.														
Monterey,	Clarion,	36,129	.....	.....	36,129	.....	.....	287.75	96	.....	.....	320	.....	10
Penna. Salt Manf'g Company.														
Natrona No. 1,	Allegheny,	125	3,600	164,913	168,638	.....	.....	260	102	.....	.....	440	.....	14
Natrona No. 2,	Allegheny,							260	74	.....	.....	400	400	7
Total,	.....	125	3,600	164,913	168,638	.....	.....	260	176	.....	.....	840	400	21
Nellie Coal Company.														
Nellie,	Butler,	6,378	613	150	7,141	.....	.....	130.50	24	.....	.....	.....	.....	1
Oak Ridge Mining Company.														
Oak Ridge Nos. 3 and 5,	Armstrong,	156,587	1,888	200	158,675	.....	.....	194	268	.....	1	950	.....	17
N. Y. & Cleveland Gas Coal Co.,														
Plum Creek,	Allegheny,	226,519	1,838	1,399	229,756	.....	.....	269.75	254	.....	1	.....	.....	13
Sandy Creek,	Allegheny,	208,800	1,269	1,309	211,378	.....	.....	288.50	279	1	1	.....	.....	37
Total,	.....	435,319	3,107	2,708	441,134	.....	.....	279.12	533	1	2	.....	.....	50

Filer Brothers. Pardee,	Mercer,	101,362	300	300	101,962	......	......	285.25	134	......	1	420	300	14
Pine Run Coal and Coke Co. Pine Run Nos. 1 and 2,	Westmoreland,	45,884	......	......	45,884	......	......	253	98	......	......	......	......	5
Penn Coal Company. Penn,	Lawrence,	13,321	......	......	13,321	......	......	178	38	......	......	25	......	3
Roaring Run Coal and Coke Co. Roaring Run,	Westmoreland,	5,908	......	......	5,908	......	......	87	32	......	1	......	......	4
Leechburg Coal and Coke Co. Riverview,	Westmoreland,	80,169	212	......	80,381	......	......	305	103	......	......	760	......	6
Donnelly, Dunham & Company. Riverview,	Armstrong,	67,928	2,100	3	70,031	......	......	161	126	......	4	250	......	13
Royle Coal Company. Royle,	Butler,	16,197	......	625	16,822	......	......	167	33	......	......	82	250	4
George E. Tener. Rock Point,	Lawrence,	46,720	62	......	46,782	......	......	306	62	......	......	26	22	10
George G. Stage. Stage,	Butler,	30,143	......	......	30,143	......	......	220	58	......	......	10	1.500	4
Campbell, Lowther Coal Co. Standard,	Clarion,	5,269	......	19	5,288	......	......	77	32	......	......	32	......	3
Sterling Mining Co., or W. H. Warner. Sterling,	Beaver,	15,934	200	......	16,134	......	......	94	108	......	......	118	......	3
Standard Coal Mining Co. Standard,	Butler,	19,300	......	526	19,826	......	......	232	45	......	......	120	200	4
State Line Coal Company. State Line,	Beaver,	40,210	1,500	......	41,710	......	......	99	121	......	......	320	......	6
Sterling Coal Company. Sterling,	Clarion,	27,385	......	......	27,385	......	......	225	49	......	......	75	50	2
Sligo Coal Company. Sligo,	Clarion,	65,950	......	80	66,030	......	......	192	61	......	1	140	30	3
Mercer Iron and Coal Company. Stoneboro No. 2,	Mercer,	5,175	119	......	5,294	......	......	88.25	33	......	......	14	......	5
Stoneboro No. 3,	Mercer,	87,247	2,362	......	89,609	......	......	255.25	147	......	......	503	90	11
Total,	......	92,422	2,481	......	94,903	......	......	171.75	180	......	......	517	90	16

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Thompson Run Coal Company. Thompson Run,	Beaver,	58,332	....	36	58,368	....	....	257	87	......	......	750	....	11
West Penn Mining Co. West Penn,	Westmoreland,	37,490	....	....	37,490	....	....	243	72	......	......	....	....	4
The Wahlville Coal Company. Wahlville Nos. 1 and 2,	Butler,	7,500	300	2,200	10,000	....	....	166	40	......	......	1,000	1,000	1
James S. Moore. Valley,	Armstrong,	5,000	....	....	5,000	....	....	60	30	1	......	....	....	....
Totals,	....	5,197,710	108,477	297,892	5,604,079	151,585	403	206.50	8,811	7	40	24,910	13,731	665

*257,694 tons from these mines was made into coke.

TABLE II—Continued.

Names of Operators.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Acme Coal Mining Co.,	Clarion,											1	133	100		
Avondale Mining & Mfg. Co.,	Clarion,															
Jos. G. Beale,	Armstrong,											1	15	15		
Straightwell, Hibbard & Co.,	Jefferson,						1					2	50	50		
Avonmore Coal and Coke Co.,	Armstrong,			2	95	95				3	150					
Allegheny Coal and Coke Co.,	Allegheny,															
Butts Cannel Coal Co.,	Butler & Beaver,			2	130	130				2	50	1	240	180		
Keystone Coal Mining Co.,	Armst'g & Cl'n,	2	100			100				2	100				1	
Joseph G. Beale & Co.,	Armstrong,			1	80	80										1
Braeburn Steel Co.,	Westmoreland,															
Sharon Coal and Limestone Co.,	Mer., Law. & B			4	400	400				4	150	3	1,274	900		2
Brackenridge Coal Co.,	Allegheny,															
Beaver Coal and Coke Co.,	Lawrence,			3	195	195				4	75	2				2
Lewis Coal Co.,	Westmoreland,	1	9	1	23	32						1	100	100		
Bagdad Coal and Coke Co.,	Armstrong,															
Peale, Peacock & Kerr., Inc.,	Jefferson,			3	300	300				3	193	1	100	60		1
Brinker Coal and Iron Co.,	Clarion,															
Pittsburg Plate Glass Co.,	Allegheny,															
Cherry Run Mining Co.,	Clarion,			1	20	20				1	15					
Carver Coal Co.,	Mercer,	4	100	2	300	400				1	50					
W. F. Clayton,	Beaver,									1	50	3				
Cowansville Mining Co.,	Armstrong,															
Hamilton Coal Mining Co.,	Westmoreland,															
Carrier Brothers,	Jefferson,			2	48	48				2	45	1	50	25		1
Catfish Run Coal Co.,	Clarion,															
Cornell Coal Company,	Allegheny,			2	50	50				1	25	1	25	20		
Filer, Sutliff & Co.,	Mercer,	10	270	2	180	450				4	200	5	2,000	1,600		
J. W. Ganoe,	Clarion,															
Addison Davidson,	Beaver,															
Darlington Brick and Mining Co.,	Beaver,															
Jos. and M. A. Lehner,	Clarion,			3	164	164				2	30					

TABLE II—Continued.

Names of Operators.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Wampum Run Coal Co.,	Lawrence,									2	25	1	147			
P. D. Sherwin,	Butler,			1	150	150			1	4	155					
Grove Coal Company,	Mercer,			3	90	90				1	50	2	1,000	700		
Fairmount Coal Co.,	Armstrong,			6	700	700			2	6	506				1	4
F. A. Mizener,	Butler,			1	150	150				1	15					
Gilpin Coal Co.,	Armstrong,															
Pittsburg Coal Co.,	Allegheny,	2	25			25				1	25	2	2,320	1,800		
Freeport Coal Co.,	Allegheny,															
Haddon Coal Co.,	Armstrong,															
Jefferson, Clearfield Coal & Iron Co.,	Jefferson,			29	1,985	1,985				10	1,070	7	2,200	1,600		9
McFetridge Bros.,	Allegheny,	2	90	2	50	140				3	115	2	250	250		1
Hill Coal Co., Limited,	Mercer,			2	85	85				4	75	1	1,000	600		
Hillville Coal and Mining Co.,	Clarion,															
Hoytdale Coal Co.,	Beaver,															
Hickory Coal Co., Limited,	Mercer,			1	150	150				3	140	2	740	400		
Pittsburg and Buffalo Co.,	Armstrong,			4	600	600			2	2	300	1	120	100	1	
Pardoe Coal Co.,	Mercer,															
Tenner Coal, Coke & Mining Co.,	Butler,			1	25	25				1	15					
American Sheet Steel Co.,	Armstrong,															
Kerr Coal Co.,	Arms'g & Butler,															
Lucesco Coal Co.,	Westmoreland,															
Ben Franklin Coal Co.,	Westmoreland,															
C. P. McCafferty,	Clarion,	2	150			150				1	100	1	100	50		1
Mosgrove Coal Works,	Armstrong,			1	80	80	1					3	250	200		
Monterey Coal Co.,	Clarion,															
Penna. Salt Manfg. Co.,	Allegheny,	2	120	1	100	220				4	210					2
Nellie Coal Co.,	Butler,			1	75	75				1	50	1	487	487		
Oak Ridge Mining Co.,	Armstrong,			6	245	245				5	145					1
N. Y. & Cleveland Gas Coal Co.	Allegheny,	2	40	1	25	65	4			4	207					
Filer Brothers,	Mercer,			1	45	45	2			3	60					
Pine Run Coal and Coke Co.,	Westmoreland,	1	30			30										
Penn Coal Co.,	Lawrence,															

Roaring Run Coal and Coke Co.,	Westmoreland															
Leechburg Coal and Coke Co.,	Westmoreland,											1	12	12		
Donnelly, Dunham & Co.,	Armstrong,	2	120	3	87	207				2	224	4	250	100		2
Royle Coal Co.,	Butler,															
George E. Tener,	Lawrence,															
George G. Stage,	Butler,															
Campbell, Lowther Coal Co.,	Clarion,															
Sterling Mining Co., or W. H. Warner,	Beaver,	1	50	1	80	130				1	30	2	300	150		
Standard Coal Mining Co.,	Butler,															
State Line Coal Co.,	Beaver,			4	215	215	1			5	305					
Sterling Coal Co.,	Clarion,															
Sligo Coal Co.,	Clarion,	1	40			40				1	15					
Mercer Iron and Coal Co.,	Mercer,			3	200	200				5	132	2	1,166	400		
Thompson Run Coal Co.,	Beaver,											1	30	30		
West Penn Mining Co.,	Westmoreland,															
The Wahlville Coal Co.,	Butler,	1	30			30						2	15	15		
James S. Moore,	Armstrong,															
Totals,		33	1,174	100	8,122	9,296	9		5	100	5,152	57	14,374	9,914	4	28

TABLE III—Showing the number of each class of employes at each colliery in the Third Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupation of Persons Employed Outside.								
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, book-keepers and clerks.	All other employes.	Total outside.	Grand total inside and outside.
Acme Coal Mining Co. Acme, ...	Clarion, ...	1	......	35	....	4	......	3	43	......	1	......	......	......	1	2	4	47
Avondale Mining & Manfg. Co. Avondale, ...	Clarion, ...	1	......	47	....	6	1	1	56	......	1	......	......	......	1	4	6	62
Joseph G. Beale. Aladdin, ...	Armstrong, ...	1	......	44	2	2	......	......	49	......	1	......	1	......	1	3	6	55
Straightwell, Hibbard & Co. Anderson Run, ...	Jefferson, ...	1	......	70	....	4	2	......	77	......	3	3	......	......	1	3	10	87
Avonmore Coal and Coke Co. Avonmore, ...	Armstrong, ...	1	......	85	2	7	2	......	97	......	1	1	2	......	1	8	13	110
Allegheny Coal and Coke Co. Avenue, ...	Allegheny, ...	1	......	24	....	2	......	......	27	......	......	......	......	......	1	......	1	28
Butts Cannel Coal Co. Annandale, ...	Butler, ...	......	......	8	....	1	......	......	9	......	......	......	......	......	......	3	3	12
Butts Cannel shaft, ...	Beaver, ...	1	......	50	1	3	......	......	55	......	1	1	......	......	......	6	8	63
Total, ...	....	1	......	58	1	4	......	......	64	......	1	1	......	......	......	9	11	75

Keystone Coal Mining Co.																		
Brady's Bend,	Armstrong,	1	......	86	2	5	1	6	101	1	1	1	3	......	2	7	15	116
Keystone,	Clarion,	1	......	30	1	2	......	......	34	......	1	......	1	......	1	2	5	39
Total,		2	......	116	3	7	1	6	135	1	2	1	4	......	3	9	20	155
Joseph G. Beale & Co.																		
Beale,	Armstrong,	1	......	45	6	1	5	......	58	......	1	1	......	......	1	5	8	66
Braeburn Steel Co.																		
Braeburn,	Westmoreland,	1	......	18	......	2	1	......	22	......	......	......	......	......	......	......	......	22
Sharon Coal and Limestone Co.																		
Buhl No. 1,	Mercer,	1	......	17	......	2	......	4	24	1	1	2	2	......	1	3	10	34
Buhl No. 2,	Lawrence,	1	......	18	......	......	......	4	23	......	1	3	......	......	1	7	12	35
Buhl No. 3,	Butler,	1	......	6	......	......	......	1	8	......	......	......	......	......	1	1	2	10
Buhl No. 4,	Butler,	1	......	3	......	......	......	1	5	......	......	......	......	......	1	1	2	7
Total,		4	......	44	......	2	......	10	60	1	2	5	2	......	4	12	26	86
Brackenridge Coal Co.																		
Brackenridge,	Allegheny,	1	......	45	1	4	......	......	51	......	......	......	1	......	......	2	3	54
Beaver Coal and Coke Co.																		
Beaver No. 2,	Lawrence,	1	......	118	8	7	......	8	142	......	3	4	......	......	3	8	18	160
Lewis Coal Company.																		
Blackstone,	Westmoreland,	1	......	85	......	7	1	2	96	......	1	1	2	......	2	1	7	103
Bagdad Coal and Coke Co.																		
Bagdad,	Armstrong,	1	......	25	......	2	......	......	28	......	1	......	1	......	1	1	4	32
Peale, Peacock & Kerr, Inc.																		
Bloomington No. 9,	Jefferson,	1	......	35	2	4	1	......	43	......	1	1	......	......	1	5	8	51
Brinker Coal and Iron Co.																		
Brinker,	Clarion,	1	......	42	......	5	......	3	51	......	2	1	1	......	1	4	9	60
Pittsburg Plate Glass Co.																		
Creighton,	Allegheny,	1	......	32	2	3	......	1	39	1	2	......	......	......	1	4	8	47
Cherry Run Mining Co.																		
Cherry Run,	Clarion,	1	......	40	1	2	1	1	46	1	1	1	1	......	1	......	5	51
Carver Coal Co.																		
Carver,	Mercer,	1	......	27	3	3	1	1	36	......	1	2	1	......	2	4	10	46
W. F. Clayton.																		
Clayton,	Beaver,	1	......	15	......	1	......	......	17	......	......	......	1	......	1	......	2	19
Cowansville Mining Co.																		
Cowansville,	Armstrong,	1	......	45	......	2	1	1	50	1	1	......	......	......	1	......	3	53

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupation of Persons Employed Outside.								Occupations of Persons Employed Inside.								
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, book-keepers and clerks.	All other employes.	Total outside.	Grand total inside and outside.
Hamilton Coal Mining Co. Crag Dell,	Westmoreland,	1	......	19	....	2	1	......	23	......	......	......	......	......	......	2	2	25
Carrier Brothers. Carrier,	Jefferson,	1	......	50	....	5	......	1	57	......	2	3	2	......	3	3	13	70
Catfish Run Coal Co. Catfish Run,	Clarion,	1	......	24	....	4	1	......	30	......	1	......	1	......	1	2	5	35
Connell Coal Co. Connell,	Allegheny,	1	......	80	5	5	1	......	92	1	1	4	1	......	1	5	13	105
Filer, Sutliff & Co. Diamond No. 1,	Mercer,	1	......	125	4	11	2	3	146	......	1	4	2	......	2	7	16	162
Diamond No. 2,	Mercer,	1	......	100	4	8	2	2	117	......	1	3	2	......	2	6	14	131
Total,		2	......	225	8	19	4	5	263	......	2	7	4	......	4	13	30	293
J. W. Ganoe. Diamond,	Clarion,	1	......	60	....	4	1	2	68	......	1	......	2	......	2	3	8	76
Addison Davidson. Davidson,	Beaver,	1	......	12	....	1	......	2	16	......	......	......	......	......	......	1	1	17
Darlington Brick & Mining Co. Darlington,	Beaver,	......	......	9	....	1	......	......	10	......	......	......	......	......	......	2	2	12

Jos. and M. A. Lehner.																		
Eagle,	Clarion,	1	......	64	......	4	......	......	69	1	......	......	......	......	2	8	11	80
Wampum Run Coal Co.																		
Excelsior No. 3,	Lawrence,	1	......	87	......	8	......	4	100	1	3	......	1	......	3	2	10	110
P. D. Sherwin.																		
Enterprise,	Butler,	1	......	15	......	1	......	......	17	......	1	1	......	......	......	4	6	23
Sherwin,	Butler,	1	......	47	......	3	......	1	52	......	2	2	1	......	1	2	8	60
Total,	......	2	......	62	......	4	......	1	69	......	3	3	1	......	1	6	14	83
Grove Coal Co.																		
Enterprise,	Mercer,	1	......	60	6	6	......	......	73	1	1	3	......	......	3	6	14	87
Fairmount Coal Co.																		
Fairmount No. 1,	Armstrong,	1	......	180	4	19	2	6	212	......	4	2	3	......	2	12	23	235
Fairmount No. 2,	Armstrong,	1	......	64	6	7	1	3	82	......	2	2	2	......	1	8	15	97
Fairmount No. 4,	Armstrong,	1	......	186	7	16	6	3	219	......	4	2	2	......	1	14	23	242
Total,	......	3	......	430	17	42	9	12	513	......	10	6	7	......	4	34	61	574
Freeport Coal Co.																		
Freeport,	Allegheny,	1	......	16	......	1	......	......	18	......	......	......	......	......	1	1	2	20
F. A. Mizener.																		
Grant,	Butler,	1	......	72	......	5	1	1	80	......	......	1	......	......	1	3	5	85
Mizener,	Butler,	1	......	76	......	8	......	2	87	......	......	......	......	......	2	1	3	90
Total,	......	2	......	148	......	13	1	3	167	......	......	1	......	......	3	4	8	175
Gilpin Coal Co.																		
Gilpin,	Armstrong,	1	......	100	1	5	2	......	109	......	1	......	1	......	1	2	5	114
Pittsburg Coal Co.																		
Glenshaw,	Allegheny,	1	......	85	3	7	1	......	97	......	2	2	......	......	2	7	13	110
Haddon Coal Co.																		
Haddon,	Armstrong,	1	......	58	......	4	......	1	64	......	1	......	2	......	1	1	5	69
Jefferson, Clearfield Coal & Iron Company.																		
Hamilton,	Jefferson,	1	......	127	......	16	2	7	153	......	......	......	......	......	......	......	......	153
Soldier No. 1,	Jefferson,	1	......	373	......	28	9	29	440	1	5	10	2	130	5	25	178	618
Soldier No. 2,	Jefferson,	1	......	240	......	23	5	12	281	......	......	......	......	......	......	......	......	281
Maplewood,	Jefferson,	1	......	150	......	10	2	9	172	......	1	5	......	......	......	6	12	184
Rathmel,	Jefferson,	1	......	144	......	10	3	3	161	......	1	2	......	......	......	6	9	170
Sherwood,	Jefferson,	1	......	30	......	3	1	1	36	......	......	3	......	......	......	3	6	42
Virginia,	Jefferson,	1	......	160	......	10	2	9	182	......	1	3	......	......	......	6	10	192
Total,	......	7	......	1,224	......	100	24	70	1,425	1	8	23	2	130	5	46	215	1,640

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupation of Persons Employed Outside.								Grand total inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, book-keepers and clerks.	All other employes.	Total outside.	
McFetridge Brothers.																		
Hites or McFetridge Bros. No. 1,	Allegheny, ...	2	1	112	....	8	3	3	129	1	2	4	......	......	2	5	14	143
Hites or McFetridge Bros. No. 2,	Allegheny, ...	1	......	12	....	1	......	......	14	1	......	......	......	......	......	......	1	15
Total, ...	....	3	1	124	....	9	3	3	143	2	2	4	......	......	2	5	15	158
Hill Coal Co., Limited.																		
Hill, ...	Mercer, ...	1	......	75	4	5	......	......	85	......	2	3	2	......	1	3	11	96
Hillville Coal Mining Co.																		
Hillville, ...	Clarion, ...	1	......	26	....	2	......	1	30	......	1	......	1	......	1	4	7	37
Hoytdale Coal Co.																		
Hoytdale, ...	Beaver, ...	1	......	11	....	2	......	......	14	......	......	......	......	......	1	......	1	15
Hickory Coal Co., Limited.																		
Hickory, ...	Mercer, ...	2	......	44	2	4	2	1	55	......	1	2	2	......	3	2	10	65
Pittsburg and Buffalo Co.																		
Johnetta, ...	Armstrong, ...	1	......	100	7	4	......	5	117	1	3	2	......	......	3	9	18	135
Pardoe Coal Co.																		
"K,"	Mercer, ...	1	......	25	2	2	......	1	31	......	1	1	1	......	1	......	4	35

Turner Coal, Coke & Mining Co.																		
Keystone No. 1, ...	Butler, ...	1	......	64	1	7	......	1	74	1	1	1	1	......	2	2	8	82
Keystone No. 2, ...	Butler, ...	.....	......	7	....	1	......	......	8	......	......	......	......	......	......	......	....	8
Total, ...	....	1	......	71	1	8	......	1	82	1	1	1	1	......	2	2	8	90
American Sheet Steel Co.																		
Kirkpatrick, ...	Armstrong, ...	1	......	18	....	2	......	......	21	......	......	......	......	......	......	......	....	21
Kerr Coal Co.																		
Kerr No. 1, ...	Armstrong, ...	1	......	12	....	1	......	......	14	......	......	......	......	......	......	......	....	14
Kerr No. 8, ...	Butler, ...	1	......	70	....	3	......	1	75	......	1	......	......	......	1	5	7	82
Total, ...	....	2	......	82	....	4	......	1	89	......	1	......	......	......	1	5	7	96
Lucesco Coal Co.																		
Lucesco, ...	Westmoreland, .	1	......	12	1	2	......	......	16	1	1	......	......	......	......	4	6	22
Ben Franklin Coal Co.																		
Metcalf, ...	Westmoreland, ..	1	......	23	....	2	......	......	26	......	......	......	......	......	......	2	2	28
C. P. McCafferty.																		
Monarch, ...	Clarion, ...	1	......	55	2	6	......	......	64	1	2	2	2	......	1	5	13	77
Mosgrove Coal Works.																		
Mosgrove, ...	Armstrong, ...	1	......	110	2	8	2	......	123	......	1	2	2	......	2	6	13	136
Monterey Coal Co.																		
Monterey, ...	Clarion, ...	1	......	80	....	7	......	2	90	......	1	......	1	......	1	3	6	96
Penna. Salt Manf'g Co.																		
Natrona No. 1, ...	Allegheny, ...	1	......	72	....	7	2	3	85	......	1	6	......	......	1	9	17	102
Natrona No. 2, ...	Allegheny, ...	1	......	55	....	5	2	3	66	......	1	1	......	......	1	5	8	74
Total, ...	....	2	......	127	....	12	4	6	151	......	2	7	......	......	2	14	25	176
Nellie Coal Co.																		
Nellie, ...	Butler, ...	1	......	17	1	1	......	......	20	......	......	2	1	......	1	......	4	24
Oak Ridge Mining Co.																		
Oak Ridge Nos 3 and 5, ...	Armstrong, ...	1	......	195	8	18	5	6	233	1	4	6	......	......	3	21	35	268
N. Y. & Cleveland Gas Coal Co.																		
Plum Creek, ...	Allegheny, ...	2	......	200	....	12	10	8	232	......	2	2	......	......	2	16	22	254
Sandy Creek, ...	Allegheny, ...	1	......	201	7	21	6	......	236	1	3	4	3	......	2	20	43	279
Total, ...	....	3	......	401	7	33	16	8	468	1	5	6	3	......	4	46	65	533
Filer Brothers.																		
Pardoe, ...	Mercer, ...	1	......	108	5	11	1	......	126	1	2	2	1	......	2	......	8	134
Pine Run Coal and Coke Co.																		
Pine Run Nos. 1 and 2, ...	Westmoreland, ..	1	....	85	1	5	......	.....	92	......	1	......	2	......	1	2	6	9[illegible]

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupation of Persons Employed Outside.								Grand total inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, book-keepers and clerks.	All other employes.	Total outside.	
Penn Coal Co. Penn, ...	Lawrence, ...	1	......	25	1	5	......	......	32	......	1	......	......	......	2	3	6	38
Roaring Run Coal and Coke Co. Roaring Run, ...	Westmoreland, ..	1	......	23	1	2	......	......	27	......	1	......	1	......	1	2	5	32
Leechburg Coal and Coke Co. Riverview, ...	Westmoreland, ..	1	......	88	......	6	2	1	98	......	1	......	1	......	2	1	5	103
Donnelly, Dunham & Co. Riverview, ...	Armstrong, ...	2	......	85	......	9	5	6	107	1	2	5	1	......	2	8	19	126
Royle Coal Co. Royle, ...	Butler, ...	1	......	25	......	4	......	......	30	......	2	......	......	......	1	......	3	33
George E. Tener. Rock Point, ...	Lawrence, ...	1	......	72	2	5	......	2	82	......	2	......	......	......	2	6	10	92
George G. Stage. Stage, ...	Butler,, ...	1	......	47	3	3	......	......	54	......	1	......	......	......	......	3	4	58
Campbell, Lowther Coal Co. Standard, ...	Clarion, ...	1	......	24	......	3	......	2	30	......	......	......	1	......	......	1	2	32

Sterling Mining Co. or W. H. Warner.																		
Sterling,	Beaver,	1	......	75	....	5	......	20	101	......	1	1	2	......	1	2	7	108
Standard Coal Mining Co.																		
Standard,	Butler,	1	......	35	....	3	......	1	40	......	1	......	1	......	2	1	5	45
State Line Coal Co.																		
State Line,	Beaver,	1	......	98	3	4	......	2	108	......	2	3	......	......	1	7	13	121
Sterling Coal So.																		
Sterling,	Clarion,	1	......	40	1	2	......	1	45	......	1	......	1	......	1	1	4	49
Sligo Coal Co.																		
Sligo,	Clarion,	1	......	50	1	2	1	......	55	......	1	1	1	......	1	2	6	61
Mercer Iron and Coal Co.																		
Stoneboro No. 2,	Mercer,	1	......	19	....	3	......	6	29	......	1	1	......	......	......	2	4	33
Stoneboro No. 3,	Mercer,	1	......	104	....	8	2	16	131	......	2	3	4	......	1	6	16	147
Total,	....	2	......	123	....	11	2	22	160	......	3	4	4	......	1	8	20	180
Thompson Run Coal Co.																		
Thompson Run,	Beaver,	1	......	65	2	7	1	1	77	......	2	1	......	......	1	6	10	87
West Penn Mining Co.																		
West Penn,	Westmoreland,	1	......	60	1	4	......	......	66	......	1	......	1	......	1	3	6	72
Wahlville Coal Co.																		
Wahlville,	Butler,	1	......	30	4	....	......	......	35	......	1	2	2	......	......	......	5	40
James S. Moore.																		
Valley,	Armstrong,	1	......	20	....	3	......	2	26	......	1	......	1	......	......	2	4	30
Totals,	....	103	1	6,682	133	541	106	233	7,799	20	117	131	77	130	116	421	1,012	8,811

TABLE III—Continued.

Names of Operators.	County.	Number of Days Worked in Each Month.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Acme Coal Mining Co.,	Clarion,	......	......	......	......	......	......	......	8	11	14	12	11	56
Avondale Mining and Manfg. Co.,	Clarion,	24	17	23	23	19	19	18	16	18	22	19	18	236
Joseph G. Beale,	Armstrong,	20	13	22	26	25	22	20	16	......	13	17	13	207
Straightwell, Hibbard & Co.,	Jefferson,	......	......	......	22	25	23	22	24	4	......	14	18	152
Avonmore Coal and Coke Co.,	Armstrong,	23	21	24	23	24	25	24	25	22	25	24	21	281
Allegheny Coal and Coke Co.,	Allegheny,	......	......	......	......	......	......	......	......	25	27	26	25	103
Butts Cannel Coal Co.,	Butler and Beaver,	25	22.50	17.50	1	3.75	7.50	19.50	23.50	15	18	23	22	138.12
Keystone Coal Mining Co.,	Armstrong and Clarion,	22.50	21.50	24	23	22.50	19	19	15	16.50	19	22	18	242
Joseph G. Beale & Co.,	Armstrong,	24.50	17	20	22	21	20	2	15	21	20	24	25	231.50
Braeburn Steel Co.,	Westmoreland,	26	24	26	26	26	25	27	27	24	27	25	25	308
Sharon Coal and Limestone Co.,	Mercer, Law. & Butler,	25	24	26	25	24	20	22.50	25	24	24	24.50	24.50	265
Brackenridge Coal Co.,	Allegheny,	27	24	26	25	27	24	26	26	25	27	26	26	309
Beaver Coal and Coke Co.,	Lawrence,	25	19	22	23	26	22	21	26	18	27	20	24	273
Lewis Coal Co.,	Westmoreland,	20	18	20	21	22	23	23	23	21	25	20	22	258
Bagdad Coal and Coke Co.,	Armstrong,	......	......	......	......	10	10	17	18	20	24	23	18	140
Peale, Peacock & Kerr, Inc.,	Jefferson,	13.50	8.50	7.75	15.50	8.50	11.50	4.75	4.50	8.50	6.50	6.75	11.75	108
Brinker Coal and Iron Co.,	Clarion,	20	21	22	15	18	16	......	......	......	......	......	......	112
Pittsburg Plate Glass Co.,	Allegheny,	......	......	......	......	......	......	......	......	......	......	......	16	16
Cherry Run Mining Co.,	Clarion,	17	17	19	11	18	14	14	9	12	10	14	15	170
Carver Coal Co.,	Mercer,	24	21	25	24	21	18	18	20	15.50	17.50	4	22	230
W. F. Clayton,	Beaver,	27	24	26	26	22	23	23	27	23	27	25	24	297
Cowansville Mining Co.,	Armstrong,	15	20	20	25	20	15	12	19	18	20	19	20	223
Hamilton Coal Mining Co.,	Westmoreland,	20	18	18	15	23	18	22	24	19	19	21	22	239
Carrier Brothers,	Jefferson,	24	14	25	24	22	22	22	24	24	25	24	20	270
Catfish Run Coal Co.,	Clarion,	20	19	19	21	20	20	20	20	20	20	20	21	240
Cornell Coal Co.,	Allegheny,	22	20	18	20	21	23	20	19	22	24	23	22	254
Filer, Sutliff & Co.,	Mercer,	16.50	20.50	25.50	13.25	23.25	23.50	25.25	22	16.75	25	25	23.50	260
J. W. Ganoe,	Clarion,	25	14.8	19	12.6	5.9	2.7	8.2	7.2	9.7	11.5	7.4	12	136
Addison Davidson,	Beaver,	24	24	26	26	17	12	23	14	23	27	25	25	266
Darlington Brick and Mining Co.,	Beaver,	23	22	25	25	24	25	26	24	25	26	24	20	289
Jos. and M. A. Lehner,	Clarion,	25	20	22	22	19	11	20	18	15	20	18	20	230
Wampum Run Coal Co.,	Lawrence,	21	20	22	22	26	20	24	26	18	23	22	24	268
P. D. Sherwin,	Butler,	23	21	24	22.50	24	23.50	23.50	24.50	24.50	24	24.50	25	284
Grove Coal Co.,	Mercer,	4.50	18	25.50	21	23	21	19	19	13.50	15.50	14	20	234
Fairmount Coal Co.,	Armstrong,	24	22	24.66	23.33	18.33	23	23.66	20.33	22.33	21	23	23.66	269.33
Freeport Coal Co.,	Allegheny,	21	19	25	22	18	20	20	25	18	12	......	......	200

F. A. Mizener,	Butler,	24.75	23.50	21.75	23.25	23.50	21.75	22.50	22.50	22.12	25.50	19	22.25	275.37
Gilpin Coal Co.,	Armstrong,	25	22	26	22	22	22	19	18	18	22	19	21	256
Pittsburg Coal Co.,	Allegheny,	25.25	22.50	23.50	12.25	23	22.75	24.25	26.50	21.50	24.75	22.75	21.50	270.50
Haddon Coal Co.,	Armstrong,	24	23	24	20	19	15	20	14	24	26	16	22	247
Jefferson, Clearfield Coal and Iron Co.,	Jefferson,	19.57	17.71	21.14	16.85	18.57	20	20.28	19	19.28	18	18.14	17.71	226.25
McFetridge Bros.,	Allegheny,	26.50	24	26	25.50	14.75	24.50	21	22	21	25.50	25.50	23	198
Hill Coal Co., Limited,	Mercer,	22.50	20.50	19.50	16.50	14	17	19	19	20	20	19.50	20	227.50
Hillville Coal and Mining Co.,	Clarion,	....	....	....	....	....	....	....	....	3	16	15	20	54
Hoytdale Coal Co.,	Beaver,	20	9	13	18	20	15	19	23	14	20	17	11	199
Hickory Coal Co., Limited,	Mercer,	24	23	24	13	22	14	22	23	23	22	22	20	252
Pittsburg and Buffalo Co.,	Armstrong,	25	23	26	25	24	25	26	26	24	26	24	24	298
Pardoe Coal Company,	Mercer,	....	....	....	....	....	....	20	22	21	20	22	20	125
Turner Coal, Coke and Mining Co.,	Butler,	24.50	19	13.75	15	24	22.50	15.50	13	11	22.25	18.75	22	193
American Sheet Steel Co.,	Armstrong,	27	24	26	26	27	25	24	27	25	27	26	19	303
Kerr Coal Co.,	Armstrong and Butler.	23	21	25	23	24	20	19	18	19	22	24	23	261
Lucesco Coal Co.,	Westmoreland,	15	24	25	24	27	....	....	26	25	27	25	25	243
Ben Franklin Coal Co.,	Westmoreland,	23	21	25	23	24	20	18	18	19	22	24	23	230
C. P. McCafferty,	Clarion,	20	13	18	21	6	8	14	12	12	13	19	15	171
Mosgrove Coal Works,	Armstrong,	21.4	21.7	23.2	21.1	15.5	13.9	8	12.3	10.9	11.5	16.9	20	207.4
Monterey Coal Co.,	Clarion,	27	24	26	25.50	23	23	24.25	23.25	22.50	23.50	23	22.75	287.75
Penna. Salt Manufacturing Co.,	Allegheny,	25	25	26	22	18	20	20	18	18	18	24	26	260
Nellie Coal Co.,	Butler,	21.50	14	....	....	....	....	8	21.50	19	18	13	15.50	130.50
Oak Ridge Mining Co.,	Armstrong,	20.50	14.75	18.50	11.50	11.50	14	12.25	10.75	11.50	24	22	22.75	194
New York & Cleveland Gas Coal Co.,	Allegheny,	24.25	23.75	24.12	20.37	22.25	22.12	24.12	25	23.12	25	22.75	22.12	279.12
Filer Brothers,	Mercer,	17	22.25	26	22.75	24.75	25	25.75	25.75	22.25	25.25	24.75	23.75	285.25
Pine Run Coal and Coke Co.,	Westmoreland,	23	21	26	24	24	19	20	21	17	20	15	23	253
Penn Coal Co.,	Lawrence,	12	14.50	12	10.50	15.50	10.50	9	21	15.50	19	18	20.50	178
Roaring Run Coal and Coke Co.,	Westmoreland,	....	....	....	....	....	....	8	9	17	16	13	24	87
Leechburg Coal and Coke Co.,	Westmoreland,	27	24	26	26	25	25	26	27	24	27	23	25	305
Donnelly, Dunham & Co.,	Armstrong,	16	4	21	20	15	18	16	8	10	10	10	13	161
Royle Coal Co.,	Butler,	25	23	26	15	23	13	....	....	....	....	22	20	167
George E. Tener,	Lawrence,	27	24	26	24	27	25	26	27	24	27	25	24	306
George G. Stage,	Butler,	22	17	20	20	18	18	20	16	20	17	20	12	220
Campbell, Lowther Coal Co.,	Clarion,	23	....	....	....	....	....	....	....	6	18	14	16	77
Sterling Mining Co. or W. H. Warner,	Beaver,	24	22	24	24	....	....	....	....	....	....	....	....	94
Standard Coal Mining Co.,	Butler,	18	22	23	15	23	22	15	20	18	21	12	23	232
State Line Coal Co.,	Beaver,	24	22	25	24	4	....	....	....	....	....	....	....	99
Sterling Coal Co.,	Clarion,	20	22	23	21	20	18	19	15	15	18	21	13	225
Sligo Coal Co.,	Clarion,	25	18	22	22	13	10	14	13	8	18	15	14	192
Mercer Iron and Coal Co.,	Mercer,	20	18.25	23.50	16.62	17.12	21.50	20	20.50	23.50	23	22.75	21.50	171.75
Thompson Run Coal Co.,	Beaver,	26	21	20	24	19	17	18	22	18	27	22	23	257
West Penn Mining Co.,	Westmoreland,	22	19	24	21	16	19	18	18	19	25	19	23	243
Wahlville Coal Co.,	Butler,	....	....	....	....	....	20	22	25	25	24	25	25	166
James S. Moore,	Armstrong,	20	21	19	....	....	....	....	....	....	....	....	....	60

TABLE IV—List of fatal accidents that occurred in and about the mines of the Third Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Feb.	18	Lawrence Linkosky,	Pole,	Miner,	33	M.	1	1	Soldier No. 1,	Jefferson,	Killed by a fall of roof slate while he was cutting down coal in his room. Linkosky and his partner neglected to support the roof properly.
March	12	Fred Walker,	American,	Miner,	36	M.	1	8	Valley,	Armstrong,	Fatally injured by a fall of roof slate. He had neglected to post it up after having taken the coal from beneath it.
	13	Frank Morris,	Welsh,	Miner,	18	S.	....	....	Fairmount No. 4,	Armstrong,	Was instantly crushed to death beneath a fall of roof slate. He and his partner were about to take the loose slate down or make it secure with timber, but in the interval the victim went beneath the loose roof for some purpose when it fell upon him.
	19	A. C. Warnick,	American,	Driver,	33	M.	1	3	Fairmount No. 1,	Armstrong,	His back was broken by a mine car. He was sitting at the side of the track at the latches of the inner hauling rope station. One of the cars jumped the track at the latches and as he attempted to push the empty car from him he was caught, which resulted in his fatal injury. Warnick had been previously warned by the mine foreman not to sit at the latches but he disobeyed the order.
Sept.	9	Richard Jennings,	English,	Outside foreman.	36	M.	1	3	Hamilton,	Jefferson,	These two men were killed by a hauling rope outside of the mines. The two first empty cars of the trip left the track and Jennings had them pulled on again by means of the hauling engines but in doing so the two rear cars became fastened to the rails of the track. Jennings and Swandrick were holding down the front car on the trip by means of a lever and while attempting to have the two rear cars pulled on to the track
	9	Joe Swandrick,	Pole,	Laborer,	24	M.	....	....	Hamilton,	Jefferson,	

											again by the engines the sheaves were torn from their fastenings, setting the rope free and striking the men with terrific force, killing both. Jennings erred in judgment.
April	8	Chas. Fred'k Berg,...	American, ...	Miner, ...	22	S.	....	....	Sandy Creek, ...	Allegheny,	Was killed by a fall of "slate" while he was engaged knocking down coal in his room. His skull was fractured. The accident was the result of the victim's own carelessness.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Third Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	21	Columbus Beale,	American,	Laborer,	21	S.	Johnetta,	Armstrong,	Caught between loaded cars and tipple timbers outside of the mine.
	31	Merle Stewart,	American,	Miner,	28	M.	Sligo,	Clarion,	Chest and abdomen crushed by a fall of coal.
	7	Frank Barlow,*	Hungarian,	Miner,	45	M.	Glenshaw,	Allegheny,	Shoulder was dislocated by being struck by a runaway car.
Feb.	2	Paul Zezulia,	Pole,	Scrapper,	34	S.	Rathmel,	Jefferson,	Back injured by a fall of coal.
	7	John Forringer,	German,	Miner,	50	S.	Enterprise,	Butler,	Leg fractured by a fall of "draw slate."
	22	Fritz Shilling,*	American,	Driver,	17	S.	Glenshaw,	Allegheny,	Leg broken by cars.
	23	Roddy C. Connor,	American,	Miner,	41	M.	Fairmount No. 4,	Armstrong,	Was seriously injured by a fall of roof.
	25	Clyde Dinger,	American,	Driver,	22	S.	Oak Ridge No. 5,	Armstrong,	Was crushed internally by car in the mine.
March	2	Thomas Poole,	American,	Miner,	60	S.	Brady's Bend,	Armstrong,	Hand injured by a fall of coal.
	2	Jabez Griffith,	Welsh,	Miner,	52	M.	Brady's Bend,	Armstrong,	Back sprained by a fall of roof slate.
	5	David Smith,	Welsh,	Driver,	32	S.	Riverview,	Armstrong,	Two ribs broken by cars in the mine.
	9	Thos. J. Buckham,	American,	Driver,	19	S.	Pardoe,	Mercer,	Was injured by cars in the mine.
	13	Samuel Craig,	German,	Driver,	41	M.	Riverview,	Armstrong,	Ankle broken by car falling on it.
	19	Alexander Kemmeski,	Pole,	Machine cutter,	33	M.	Soldier No. 1,	Jefferson,	Injured by a fall of slate.
	18	M. H. Elder,	American,	Machine cutter,	35	M.	Soldier No. 2,	Jefferson,	Back injured by a fall of top slate.
	18	James Mitchell,	American,	Loader,	19	S.	Soldier No. 2,	Jefferson,	Back injured by the same fall of slate.
	8	Joseph Doucherty,	American,	Miner,	56	M.	Roaring Run,	Westmoreland,	Leg broken by a fall of coal.
May	2	Phillip A. Byers,	American,	Miner,	27	M.	Riverview,	Armstrong,	Two toes cut off by fall of coal.
	11	Jacob Wensel,	American,	Miner,	28	M.	Cherry Run,	Clarion,	Ankle, hip and side injured by fall of slate.
	14	Frank Patvilil,	Italian,	Machine cutter,	36	M.	Soldier No. 1,	Jefferson,	Back injured by a fall of top coal.
	14	Andrew Garity,	Scotch,	Engineer,	38	M.	Soldier No. 2,	Jefferson,	Was caught between the pinion and gear wheels of hauling engine.
	14	Peter Shaffer,†	German,	Miner,	48	S.	Plum Creek,	Allegheny,	Three ribs broken by a fall of slate while working in his room.
	20	William Gardner,	American,	Weighmaster,	34	M.	Freeport,	Allegheny,	Hip bone broken by being caught between coal pan and tipple.
June	14	Floyd Hawk,	American,	Driver,	14	S.	Keystone,	Clarion,	Small bone of arm broken. He was thrown off a mule.
	17	Lee McAninsh,	American,	Miner,	45	M.	Mosgrove,	Armstrong,	Was injured by fall of coal.

	27	John Fleeger,	American,	Trapper,	58	M.	Avonmore,	Armstrong,	Foot sprained and bruised by the haulage rope.
July	10	William Fleeger,	American,	Miner,	34	M.	Avonmore,	Armstrong,	Collar bone broken by a fall of "draw slate."
Sept.	17	Michael Bettermie,	Italian,	Miner,	36	M.	Sandy Creek,	Allegheny,	Left leg and right arm were broken by a fall of roof slate.
	17	Mike Cabbage,	Pole,	Miner,	42	M.	Kerr No. 8,	Butler,	Severely injured about the head and body by a fall of slate.
	6	Antoma Cavelier,	Italian,	Miner,	36	M.	Grant,	Butler,	Several ribs broken and cut about his head by a fall of slate.
	6	Harry Scaddon,	American,	Driver,	30	M.	Fairmount No. 4,	Armstrong,	Several bones of his right foot broken by cars.
Nov.	13	George Crawford,	American,	Weighmaster,	20	S.	Bagdad,	Armstrong,	Leg broken and toes mashed by railroad car.
	14	Joe Standcon,	Pole,	Miner,	24	S.	Soldier No. 1,	Jefferson,	Hip dislocated by a fall of slate.
	15	Henry B. Fox,	American,	Car trimmer,	63	M.	Fairmount No. 4,	Armstrong,	Leg was cut off by a railroad car.
	22	James Klugh,	American,	Miner,	34	M.	Enterprise,	Butler,	Leg was badly bruised by a piece of "draw slate" falling upon it.
	27	James Foultz,	American,	Carpenter,	34	M.	Soldier No. 1,	Jefferson,	Several ribs broken while he was repairing the elevators.
	27	Charles Stewart,	American,	Pumper,	21	S.	Riverview,	Armstrong,	Face and hands burned by gasoline which exploded while he was emptying it into a tank inside of the mine.
Dec.	3	Anthony Linfents,	German,	Miner,	48	M.	Johnetta,	Armstrong,	Hips sprained by a fall of slate.
	3	David Deitch,	German,	Driver,	52	M.	Soldier No. 2,	Jefferson,	Leg broken by cars in the mine.
	20	William Brogan,	American,	Miner,	28	S.	Catfish Run,	Clarion,	Head injured by a mule kicking him.

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*These accidents are transferred from the Seventh district to the Third district owing to the change of districts last May.

†This accident was transferred from the Second to the Third district owing to the rearrangement of the districts in May.

Fourth Bituminous District.

ELK, JEFFERSON, CLEARFIELD, CENTRE, TIOGA, CLINTON, LYCOMING, BRADFORD AND McKEAN COUNTIES.

DuBois, Pa., February 24, 1902.

Hon. James W. Latta, Secretary of Internal Affairs, Harrisburg, Pa.:

Sir: I have the honor of herewith submitting my annual report for the Fourth Bituminous District, for the year ending December 31, 1901. In compliance with the provisions of the act of Assembly approved May 15, 1893.

The production of coal as reported to this office, amounts to 5,802,779 short tons for the year. Of this 5,583,744 tons were shipped to market by rail and 89,285 tons were manufactured into coke, while 129,750 tons was sold to employes and others, and used at the mines for producing steam. There has been a great deal of idle time at a majority of the mines during the summer and autumn having been caused principally from a shortage of cars. Fifty-seven accidents occurred in and about the mines during the year, in which thirteen persons lost their lives, while many of the non-fatal accidents were of a very serious nature, the victims suffering the loss of limbs. As a result of these accidents, four wives were left widows and seventeen children fatherless. In reviewing these sad occurances I am sorry to say, that a large percentage of them were the result of carelessness, and lack of forethought on the part of the victims, and others, many of whom had but little knowledge of the dangers incident to coal mining. The condition of the mines as a whole is reasonably good. Two ventilating fans were installed durthe year, and two furnaces dispensed with, as they had become inadequate to provide a lawful volume of air. The report contains the usual statistical tables, and description of improvements made by several companies, together with some additional information relative to machine mining, and ventilation of the mines of the district.

All of which is very respectfully submitted,

ELIAS PHILLIPS,
Inspector.

Summary of Statistics 1901.

The figures denoting production, shipments, etc., are short tons:

Number of mines in the district, ...	78
Number of mines in operation during 1901, ...	76
Number of tons of coal produced, ...	5,802,779
Number of tons shipped, ...	5,583,744
Number used in the manufacture of coke, ...	89,285
Number used for steam at mines, ...	68,504
Number sold to employes and others, ...	61,246
Number mined by pick, approximately, ...	4,504,339
Number mined by machine (electric), approximately,	302,980
Number mined by machine (compressed air), approximately, ...	995,460
Number of tons of coke produced, ...	44,376
Number of coke ovens, ...	500
Number of persons employed inside the mines, ...	8,459
Number of persons employed outside the mines, ...	1,122
Number of mules and horses used, ...	670
Number of fatal accidents, ...	13
Number of non-fatal accidents, ...	44
Number of tons of coal produced per life lost, ...	446,376
Number of tons of coal produced per non-fatal accident, ...	131,881
Number of persons employed per each fatal accident,	737
Number of persons employed per non-fatal accident, .	217.75
Number of wives made widows by accidents, ...	4
Number of children orphaned by accidents, ...	17
Number of kegs of powder reported used, ...	42,889
Number of pounds of dynamite reported used, ...	40,150
Number of cylindrical boilers, ...	12
Number of tubular boilers, ...	84
Number of steam locomotives, ...	17
Number of air locomotives, ...	1
Number of electric locomotives, ...	20
Number of air compressors, ...	12
Number of electric dynamos, ...	14
Number of new mines opened, ...	4
Number of old mines abandoned, ...	1
Number of old mines re-opened, ...	1
Average number of days worked at all the mines, ..	221.25

TABLE A—Showing the Production of Coal and Coke by the Several Companies During the Year 1901.

Names of Companies.	Production of coal in tons.	Production of coke in tons.
Jefferson and Clearfield Coal and Iron Company,	797,323	....
Northwestern Mining and Exchange Company,	806,767	....
Clearfield Bituminous Coal Corporation,	582,637	21,235
Shawmut Mining Company,	460,786	....
Blossburg Coal Company,	362,427	....
Lehigh Valley Coal Company,	411,633	....
Berwind White Coal Mining Company,	281,096	....
Jefferson Coal Company,	289,000	....
Magee and Ellsworth,	163,058	....
Morris Run Coal Mining Company,	333,592	....
Kettle Creek Coal Mining Company,	306,228	....
Red Run Coal Company,	107,097	....
Frank Williams & Company,	151,675	23,141
Joseph H. Reilly & Company,	103,847	....
Kelly & Nugent,	12,048	....
Rochester and Pittsburg Coal and Iron Company,	204,376	....
Hall and Kaul,	19,242	....
Harbison Walker Company,	12,844	....
Matt. Schadeck,	9,251	....
Long Valley Coal Company,	22,359	....
W. F. Holt,	19,240	....
J. F. Keating,	15,873	....
A. G. Spears,	13,365	....
Kersey Coal and Coke Company,	154,104	....
Elk Coal Company,	27,679	....
Cardiff Coal and Coke Company,	19,615	....
Isaac Stage,	10,186	....
Kelly Brothers,	50,495	....
Estate of W. J. Jackson,	22,498	....
Karthaus Coal Mining Company,	9,100	....
Clearfield and Grampian Coal Co.,	24,000	....
Total,	5,802,779	44,376

Production by Counties.

Clearfield,	1,642,961	44,376
Jefferson,	1,124,570	....
Elk,	1,231,200	....
Tioga,	859,077	....
Centre,	493,416	....
Clinton,	306,228	....
Lycoming,	107,095	....
Bradford,	22,359	....
McKean,	15,873	....
Total,	5,802,779	44,376

TABLE B—Showing the total tonnage, number of fatal and non-fatal accidents, tonnage of coal produced per fatal and non-fatal accident, total number of persons employed, number of persons employed per life lost, and persons injured, and the average number of tons of coal produced per employe.

Name of Companies.	Total number of tons of coal produced.	Number of lives lost.	Number of serious accidents.	Number of tons of coal produced per life lost.	Number of tons of coal produced per non-fatal accident.	Total number of persons employed.	Number of persons employed per life lost.	Number of persons employed per non-fatal accident.
Jefferson and Clearfield Coal and Iron Co.,	797,323	......	5	....	159,464.6	859	....	171.5
N. W. Mining & Exchange Co.,	806,767	2	1	403,383.5	806,767	1,318	659	131.8
Clearfield Bit. Coal Corporation,	582,037	......	2	....	291,018.5	921	....	460.5
Shawmut Mining Co.,	460,786	1	......	460,786	....	682	682	....
Blossburg Coal Co.,	362,427	......	1	....	362,427	1,077	....	107.7
Lehigh Valley Coal Co.,	411,633	1	3	411,633	137,211	539	539	179.7
Berwind White C. M. Co.,	281,096	......	12	....	23,424.66	331	....	275.8
Jefferson Coal Co.,	289,000	......	3	....	96,333.3	335	....	111.6
Magee & Ellsworth,	163,058	3	3	54,352.7	54,352.7	386	128.7	128.7
Morris Run Coal Mining Co.,	333,592	1	6	333,592	5,559.9	750	750	125
Kettle Creek Coal Mining Co.,	306,228	2	2	153,114	153,114	351	175.5	175.5
Red Run Coal Co.,	107,095	1	......	107,095	....	225	225	....
Frank Williams & Co.,	151,675	......	1	....	151,675	287	....	287
Joseph H. Reilley & Co.,	103,847	......	......	....	....	209	....	....
Kelly & Nugent,	12,048	......	......	....	....	21	....	....
Rochester and Pittsburg C. and I. Co.,	204,376	......	2	....	102,188	267	....	133.5
Hall & Kaul,	19,242	......	......	....	....	39	....	....
Harbison Walker Co.,	12,844	......	1	....	12,844	22	....	....
Matt. Schadeck,	9,251	......	......	....	....	30	....	....
Long Valley Coal Co.,	22,359	......	......	....	....	57	....	....
W. F. Holt,	19,240	......	......	....	....	30	....	....
J. F. Keating,	15,873	......	......	....	....	50	....	....
A G. Spears,	13,305	......	......	....	....	43	....	....
Kersey Coal and Coke Co.,	154,104	2	......	77,052	....	337	168.5	....
Elk Coal Co.,	27,679	......	1	....	27,679	85	....	85
Cardiff Coal and Coke Co.,	19,615	......	......	....	....	79	....	....
Isaac Stage,	10,186	......	......	....	....	22	....	....
Kelly Bros.,	50,495	......	......	....	....	105	....	....
Estate of W. J. Jackson,	22,498	......	......	....	....	45	....	....
Karthaus Coal Mining Co.,	9,100	.....	......	....	....	32	....	....
Clearfield & Gramplan Coal Co.,	24,000	......	1	....	24,000	47	....	....
Total and average,	5,802,779	13	44	....	....	9,581	....	....

Average production per employe, 605.65.

TABLE C—Classification of Accidents.

	Killed.	Injured.	Total.
By falls of coal,	4	6	10
By falls of roof slate,	7	17	24
By mine cars, inside,	1	17	18
By mine cars, outside,	....	1	1
By explosion of shots,	1	1	2
By careless handling of powder,	....	2	2
Total,	13	44	57

TABLE D—Occupations of Persons Killed or Injured.

	Killed.	Injured.	Total.
Miners,	13	29	42
Drivers,	....	7	7
Scrapers,	....	2	2
Machine runners,	....	2	2
Gripmen,	....	1	1
Rope riders,	....	1	1
Laborers,	....	1	1
Door boys,	....	1	1
Total,	13	44	57

TABLE E—Nationalities of Persons Killed or Injured.

	Killed.	Injured.	Total.
Americans,	2	9	11
English,	....	8	8
Welsh,	1	....	1
Irish,	....	3	3
Scotch,	....	3	3
Swedes,	2	4	6
Italians,	4	....	4
Poles,	2	6	8
Slavs,	1	7	8
Austrians,	....	2	2
Hungarians,	1	....	1
Germans,	....	1	1
Norwegians,	....	1	1
Total,	13	44	57

TABLE F—Giving name of mines using coal cutting machines, kind of opening, method of ventilation, name and number of each machine in use, type of machines, power used with machine, heighth of vein mined by machine, and approximate number of short tons of coal mined by both type of machines in the Fourth Bituminous District during the year 1901.

Name of Mine.	Method of ventilation.	Kind of Opening.	Name and Number of Each Kind of Machine in Use.				Power Used with Machine.	Type of Machine.	Height of Vein in Feet and Inches.		Approximate Tonnage of Coal Mined by Machines.	
			Ingersoll.	Sullivan.	Harrison.	Jeffrey.			Thickest.	Thinnest.	Electric machine.	Compressed air machine.
Berwind shaft,	Fan,	Shaft,	......	10	4	......	Compressed air,	Puncher,	5 ft.	3 ft.	....	216,160
Rochester,	Fan,	Drift,	17	5	2	......	Compressed air,	Puncher,	7 ft.	5 ft. 4 in.	....	193,655
London,	Fan,	Drift,	10	6	14	......	Compressed air,	Puncher,	7 ft.	5 ft. 4 in.	....	283,094
Pancoast,	Fan,	Drift,	2	......	......	......	Compressed air,	Puncher,	7 ft.	5 ft. 4 in.	....	27,169
Helvetia,	Fan,	Slope,	1	17	......	......	Compressed air,	Puncher,	5 ft. 6 in.	3 ft. 6 in.	....	204,367
West Clarion,	Fan,	Drift,	......	......	......	7	Electricity,	Chain cutter,	4 ft. 6 in.	3 ft.	110,703	....
Clarion No. 27,	Fan,	Drift,	......	......	......	4	Electricity,	Chain cutter,	3 ft. 4 in.	2 ft. 6 in.	46,909	....
Clarion No. 29,	Furnace,	Drift,										
Shawmut No. 5,	Fan,	Drift,	......	......	......	9	Electricity,	Chain cutter,	3 ft. 4 in.	2 ft. 6 in.	46,114	....
Shawmut No. 6,	Fan,	Slope,	......	......	......	11	Electricity,	Chain cutter,	3 ft. 4 in.	2 ft. 6 in.	46,374	....
Shawmut No. 8,	Fan,	Drift,	......	5	......	11	Compressed air and electricity.	Chain cutter and puncher.	3 ft. 4 in.	2 ft. 6 in.	52,880	17,861
Shawmut No. 10,	Furnace,	Drift,										
Coal Glen,	Fan,	Drift,	......	......	2	......	Compressed air,	Puncher,	4 ft. 6 in.	3 ft. 6 in.	....	5,000
Antrim No. 5,	Fan,	Slope,	......	......	10	......	Compressed air,	Puncher,	4 ft.	3 ft. 6 in.	....	48,154
Total,	....	....	30	43	32	42	....	....	....	....	302,980	995,460

TABLE G—Giving name of mines, kind of opening, mode of ventilation, diameter of fan, size of furnace, power used with fan, capacity of fan or furnace, number of splits of air, cubic feet of air in each split, number of persons employed inside and number of cubic feet of air per minute for each employe inside in the Fourth Bituminous District, 1901.

Name of Mines.	Kind of opening.	Method of ventilation.	Diameter of fan in feet.	Size of furnace bars in square feet.	Power used to operate fan engines.	Total volume of air in cubic feet per minute, produced by fan or furnace.	Number of splits.	Number of Cubic Feet of Air in Each Split. Split No. 1.	Split No. 2.	Split No. 3.	Split No. 4.	Number of persons employed inside.	Number of cubic feet of air per minute per employe, inside.
Berwind shaft,	Shaft,	Fan,	25		Steam,	115,850	4	31,200	14,000	22,000	31,500	260	445
Cataract,	Drifts,	Two furnaces,		70		26,500	2	10,500	16,000			40	662
Helvetia,	Slope,	Fan,	25		Steam,	57,600	2	25,500	12,400			242	238
Rochester,	Drift,	Fan,	20		Steam,	62,400	2	35,600	26,800			323	190
Sandy Lick,	Drift,	Fan,	6		Compressed air,	24,800	1	24,800				40	620
Williamsport No. 2,	Drift,	Fan,	8		Steam,	15,600	1	15,600				145	107
Williamsport No. 6,	Drift,	Fan,	6		Steam,	33,600	1	33,600				102	329
Fairmount No. 1,	Drift,	Furnace,		24		9,400	1	9,400				21	448
Rayboid No. 2,	Drift,	Furnace,		28		22,500	1	22,500				43	523
Grampian No. 1,	Drift,	Furnace,		28		13,820	1	13,820				39	354
Clearfield No. 10,	Drift,	Furnace,		12		3,200	1	3,200				15	213
Moravian,	Drift,	Furnace,		54		37,400	3	14,400	7,000	16,000		176	212
Pleasant Hill,	Drift,	Furnace,		54		49,500	3	16,000	12,500	21,000		216	229
Grassflat No. 10,	Drift,	Fan,	16		Steam,	41,500	2	19,600	21,900			145	286
Grassflat No. 9,	Drift,	Furnace,		54		17,280	1	17,280				39	443
Grassflat No. 11,	Drift,	Furnace,		54		26,250	2	6,000	20,250			70	350
Knox Run No. 1,	Drift,	Furnace,		54		21,000	1	21,000				85	247
Knox Run No. 2,	Drift,	Furnace,		54		25,000	2	13,200	11,800			127	197
Brittanic,	Drift,	Furnace,		24		6,400	1	6,400				31	206
Mt. Carmel,	Drift,	Furnace,		28		8,120	1	8,120					
Mosquito,	Drift,	Furnace,		24		3,500	1	3,500				26	135
Meyers Run,	Drift,	Furnace,		28		13,440	1	13,440				41	328
Sugar Camp Nos. 7 and 12,	Drift,	Furnace,		64		28,000	2	19,200	8,800			120	233
Sugar Camp Nos. 2 and 4,	Drift,	Furnace,		64		48,000	2	13,500	29,600			177	271
Sugar Camp Nos. 5 and 8,	Drift,	Furnace,		90		18,000	2	12,400	5,600			96	188
Sugar Camp No. 9,	Drift,	Furnace,		48		22,400	1	22,400				49	457
Sugar Camp No. 10,	Drift,	Furnace,		48		18,200	1	18,200				31	590
Sugar Camp No. 11,	Drift,	Furnace,		48		15,000	1	15,000				21	714
Cato,	Drift,	Natural,				3,500	1	3,500				18	195
Cherry Run,	Drift,	Furnace,		32		8,000	1	8,000				28	285

TABLE G ventilation, etc., etc.,—Continued.

Name of Mines.	Kind of opening.	Method of ventilation.	Diameter of fan in feet.	Size of furnace bars in square feet.	Power used to operate fan engines.	Total volume of air in cubic feet per minute, produced by fan or furnace.	Number of splits.	Number of Cubic Feet of Air in Each Split. Split No. 1.	Split No. 2.	Split No. 3.	Split No. 4.	Number of persons employed inside.	Number of cubic feet of air per minute per employe, inside.
Snow Shoe No. 4,	Drift,	Furnace,	......	32	......	14,200	1	14,200	......	......	......	50	284
Snow Shoe No. 5,	Drift,	Furnace,	......	32	......	13,500	1	13,500	......	......	......	45	300
Kettle Creek No. 1,	Drift,	Furnace,	......	40	......	18,000	1	18,000	......	......	......	75	240
Kettle Creek Nos. 2 and 3,	Drift,	Fan,	6	......	Steam,	46,000	2	30,000	16,000	......	......	194	238
Dagus No. 1,	Slope,	Fan,	13½	......	Steam,	44,680	3	17,280	13,320	18,100	......	294	169
Dagus No. 3,	Drift,	Fan,	8	......	Steam,	25,000	2	12,400	12,600	......	......	130	115
Eureka,	Slope,	Furnace,	......	30	......	31,250	2	11,250	20,000	......	......	130	240
Clarion No. 27,	Drift,	Fan and Furnace,	6	40	Electricity,	40,820	2	39,600	10,220	......	......	165	248
Clarion No. 29,	Drift,	Furnace,	......	48	......	30,420	2	21,600	8,820	......	......	129	235
West Clarion No. 1,	Drift,	Furnace,	......	54	......	24,000	2	9,600	14,400	......	......	70	342
West Clarion Nos. 3 and 6,	Drift,	Fan and furnace,	6	40	Electricity,	47,920	3	16,800	15,000	16,120	......	143	335
Shawmut No. 1,	Drift,	Furnace,	......	54	......	29,800	3	7,680	7,920	9,800	......	51	584
Shawmut No. 5,	Drift,	Fan,	18	......	Steam,	43,000	4	6,800	9,900	8,000	14,200	106	409
Shawmut No. 6,	Slope,	Fan,	18	......	Steam,	62,400	3	19,200	16,400	29,400	......	108	578
Shawmut No. 8,	Drift,	Fan,	16	......	Steam,	45,000	4	5,250	7,700	8,050	18,000	119	378
Shawmut No. 9,	Drift,	Furnace,	......	32	......	7,900	1	7,900	......	......	......	12	658
Shawmut No. 10,	Drift,	Furnace,	......	48	......	28,680	4	5,280	6,400	7,800	8,420	64	448
Mead Run No. 4,	Drift,	Furnace,	......	48	......	22,480	2	11,000	11,480	......	......	126	178
Hazel Dell,	Drift,	Furnace,	......	32	......	8,600	1	8,600	......	......	......	35	245
Byrne Nos. 1, 2 and 3,	Drift,	Two furnaces,	......	90	......	60,700	3	18,480	21,000	21,220	......	261	233
Elk No. 31,	Drift,	Furnace,	......	54	......	27,000	2	13,500	13,500	......	......	66	409
Cardiff No. 41,	Drift,	Two furnaces,	......	64	......	34,860	2	15,940	19,320	......	......	52	670
London,	Drift,	Fan,	12½	......	Steam,	100,000	3	25,600	11,600	48,720	......	424	236
Pancoast,	Drift,	Fan,	6	......	Compressed air,	12,500	1	12,500	......	......	......	23	543
Coal Glen No. 1,	Drift,	Two fans,	6	......	Compressed air,	42,630	3	12,600	18,630	9,200	......	112	380
Coal Glen No. 2,	Drift,	Fan,	8	......	Gasoline,	23,600	2	10,400	9,800	......	......	156	150
Beechtree No. 2,	Drift,	Furnace,	......	15	......	11,600	1	11,600	......	......	......	38	300
Rattlesnake Run,	Drift,	Furnace,	......	35	......	32,400	2	18,000	14,400	......	......	94	345
Brock,	Drift,	Furnace,	......	64	......	45,400	2	21,000	24,400	......	......	195	233
Red Run No. 2,	Drift,	Fan,	6	......	Electricity,	22,000	2	10,200	12,000	......	......	65	338
Red Run No. 7,	Drift,	Fan,	6	......	Electricity,	31,500	2	20,100	11,400	......	......	80	394
Red Run No. 8,	Drift,	Fan,	6	......	Electricity,	12,600	1	12,600	......	......	......	30	420

Lyman,	Drift,	Furnace,		24		4,200	1	4,200				14	300
Instanter,	Drift,	Furnace,		32		6,200	1	6,200				27	230
Arnot No. 1,	Drift,	Furnace,		36		13,000	2	5,600	6,400			124	104
Arnot No. 2,	Drift,	Natural,				22,400	2	5,200	17,200			163	137
Arnot Nos. 3 and 5,	Drift,	Fan,	18		Steam,	76,500	3	22,000	19,500	36,000		353	214
Arnot No. 7,	Drift,	Furnace,		40		19,560	1	19,560				79	247
Maple Hill,	Drift,	Furnace,		32		6,800	1	6,800				19	358
Bear Run,	Drift,	Fan,	14		Steam,	47,200	2	19,200	28,000			242	195
Jones No. 1,	Slope,	Fan,	20		Steam,	82,800	3	20,400	29,600	32,200		600	139
New Mine,	Drift,	Furnace,		32		14,800	1	14,800				95	155
Antrim No. 1,	Drift,	Fan,	8		Steam,	33,600	1	33,600				90	373
Antrim No. 5,	Slope,	Fan,	20		Steam,	37,800	1	37,800				165	230
Anna "S,"	Drift,	Fan,	16		Steam,	20,500	1	20,500				41	500
Long Valley,	Drift,	Fan,	6		Steam,	18,900	1	18,900				39	485
Total and average,												8,459	*254.6

*Average quantity of air produced per minute to each employe inside.

Description of Fatal Accidents 1901.

Joseph Congelius was fatally injured in the Red Run No. 7 mine, on February 21, by a blast blowing through a pillar. The person who fired the shot claimed that he gave Congelius warning by rapping on the coal. I concluded if any warning had been given, it was misunderstood, and as neither were practical miners alone accounts for the accident.

Nicola Deddada was fatally injured by a fall of slate in the West Clarion mines, on March 14. He was taking out heading pillars, and the fall that caught the victim, came off the side of heading, which they had failed to secure; as it was very dangerous, great care was necessary on the part of the miners.

On April 4, Aaron L. Nelson was instantly killed by a fall of coal, in the Kettle Creek mines. Upon investigation, I found that he had taken the usual precautions, having had sprags set under the coal, but as it was very dangerous from the frequency of clay slips, he erred in undercutting too deeply, and sprags could not be depended on.

On April 13, John J. Hughes was so seriously injured by a fall of slate, in the Jones mine, that he died in a few hours after. He was turning a room off a heading, and had fired a shot in the coal, and returning began to trim down some coal the blast had left standing, which lossened the stone that fell upon him. The roof was very dangerous, and required constant care and systematic propping, which I believe he neglected.

Peter Ganzman was instantly killed, by a fall of coal in the Byrne mine, on April 19. He had fired a shot which failed to bring the coal down, and without taking any precaution he got under it to undermine it, when it fell upon him.

Coolearier Angelo was instantly killed by a fall of slate, in the Byrne mines, on May 14. He in company with another man was driving a heading, and in blasting the roof down they did not trim down the sides which became dangerous as the heading advanced. The mine foreman had instructed them to take the slate down, but this they neglected, and one of them paid the penalty with his life.

Thomas Taylor was instantly killed by a trip of cars in the Antrim No. 5 mine, on June 14. Two veins of coal are mined in this opening, and a plane is driven from the lower or Blossburg vein to the Cushing seam, and a double track is provided thereon. On the morning of the accident, Taylor and his son were ascending the plane to the upper vein where they worked. They had got about two-thirds way up, when a trip of cars broke loose from the top of the plane and caught both of them as they attempted to cross to the other side of the heading. If Taylor had kept his presence of mind, his boy would not have been seriously injured, and his own life would have been spared.

Frederick Nelson was instantly killed at Shawmut No. 8 mine, on June 25, by a fall of slate. The victim and his partner were working in a heading, and had driven a cross-cut from the main heading to the airway or back heading, and a side cut was made by machine. Nelson was drilling a hole in this side cut, when a large stone fell upon him. I was in the mine, at the time and arrived at the place in a few minutes, and after questioning his partner and others, I concluded the accident was unavoidable, as the roof was considered safe.

Lewis Brosofsky was fatally injured by a fall of coal in the Kettle Creek mines on July 20. The victim was undermining the coal and neglected to use sprags and paid the penalty with his life.

James Taylor was fatally injured by a fall of slate, in the Eureka slope, on July 22. His injuries were not considered dangerous, and it was thought by attending physician that he would recover. He died however on July 29. The roof in his place was dangerous, and while he was a careful miner, he probably had not taken the precaution he should.

John Sakel was instantly killed by a fall of coal in the Sugar Camp Mines on October 1. His death was caused by his disregard of the usual precautions to prevent accidents from this cause, as provided for in the act of 1893.

On December 24, a very sad accident occurred in the Antrim No. 5 mine, in which Stacho Karchinskie and Patrick Wasnaik were fatally injured, by a fall of roof. They were employed in removing heading stumps, and were advancing on a stump of coal, and judging from the extent of the fall, considerable space had been left standing on props which no doubt fell without warning. The men had fired a shot, and had returned to load a car, when the place began falling, and while they were running to escape they were caught and covered under tons of rock, which held them prisoner for several hours. They died shortly after being taken home. An inquest was held, and the jury rendered a verdict of accidental death by a fall of roof and exonerated the company and employes from all blame.

Improvements Made by Several Companies During 1901.

Berwind-White Coal Mining Company.

DuBois Shaft.—There were added to the equipment, one 26″x30″ Norwalk air compressor, a Ramsey pusher or Ram, a fire pump and plugs, a new four roomed wash house for the employes, fitted with steam heat and hot and cold water. A supply house was also erected, its dimensions being 20x30 feet,

Shawmut Mining Company.

Shawmut No. 6.—Installed one Thompson-Ryan dynamo and McEwen engine 200 K. W. or 260 H. P. One air shaft sixty feet deep, and 8x8 feet in the clear was sunk.

Shawmut No. 8.—Added one seven and one-half ton Baldwin-Westinghouse electric locomotive. Also installed one sixteen foot diameter Kenney fan.

Red Run Coal Company.

Red Run Mine.—There were added to the equipment, one 200 H. P. McEwen engine, one 120 K. W. (Jeffrey) generator, and one Baldwin-Westinghouse electric locomotive.

Joseph H. Reilly & Co.

Brock Mines.—A new tipple was erected with a thorough equipment for handling coal, viz: Pans and suspension scales. The pans are equipped with screens, and coal is weighed in a basket at place of dumping. One mile of railroad was built at considerable cost, also a tram road. A new power house was built, and two new 100 H. P. boilers installed. A new motor house, sand house, oil house and barn were also erected. Mine drainage was also improved during the year at considerable cost.

McGee & Ellsworth.

Anna "S" Mine.—Besides the installation of a sixteen foot diameter Guibal fan, at this time, a new tipple and engine house were erected on the Antrim or East side of the valley, which is three-fourths of a mile from the mine. The coal from the mine will be brought over this valley to the tipple by the Bleichert system of aerial wire rope haulage. This system consists of two ropes supported on towers, placed at convenient distances. The ropes are used as rails for supporting the carriages, to which the buckets that hold the load are suspended. The ropes are eight feet seven inches apart, and are the same as a double tracked railway. The rope for the loaded buckets is one and three-eight inches in diameter, and the one for the empty buckets is one inch in diameter. The towers between the tipple and the loading terminal station are eight in number, besides the double tension station which is located 2,300 feet from the tipple, and at a point where the strain can be applied to the ropes to keep them at a desired tension. The double tension station is a structure fifty-one feet long, and the ropes from the tipple and loading station are attached to large boxes loaded with stone, two boxes having a capacity of 300 cubic feet, and two 180 cubic feet each. The larger boxes are attached to the rope conveying the loaded buckets, and the smaller ones to the rope conveying the empty buckets. The buckets are taken over this fifty-one feet by means of an iron or steel rail. The towers are at various distances apart. The longest span is between the double tension station and No. 3 tower on the west side, which is 1,000 feet from the center of these structures. No. 3 tower is 240 feet higher than the double tension station, and the ropes are more than 100 feet higher than the bed of the creek where they cross it. The traction rope which moves the carriages on this aerial railway is an endless one, five-eight inches in diameter, and runs between the carrying ropes at a gauge of eight feet. The power that operates this tramway is a pair of horizontal steam engines. Anna "S" Mine.—Engines, cylinders 11"x14". Steam is furnished by one tubular boiler forty-four inches in diameter and fourteen feet long. Nineteen horse power required to operate the system. The engines are connected to the traction rope by means of belts, pulleys and beveled gear wheels. The carriages were planned to travel at a speed of 250 feet per minute, but it is now thought that the speed will be increased to perhaps 350 feet. The traction rope is kept from slipping by means of a grip wheel. The way in which the carriages are sent out at the terminal stations is a very ingenious one, and is automatic, the clutches gripping the ropes automatically as the buckets are pushed through the attachers, and the carriages unclutching as they come into the terminals through the detachers.

Description of Mines.

Clearfield County Mines.

Berwind Shaft.—The condition of this colliery has been good on each of my visits. A good volume of air was provided, which was well conducted through the several splits, in sufficient quantities to keep the workings in a safe, and healthful condition. Mining is confined entirely to the south side of the mine, and considerable pillar drawing has been done during the year, the intention being in future to remove all pillars as far as practicable, as the workings advance. A new side track was laid, and the rope haulage extended 1,000 feet during the year.

Cataract.—The condition of these openings was very fair considering the difficulty in maintaining ventilation and drainage in such mines, where only pillar drawing is done. There has been much idle time at these mines during the year, and but few persons have been employed.

Helvetia Mine.—The conditions of this mine have been very fair on each visit. A reasonably good current of air was circulating around the workings, and considering the quantity of water this mine makes, and the difficulty experienced in handling it, the workings were fairly well drained.

Rochester Mine.—A lawful volume of air was measured on the inlet, which was fairly well conducted throughout the workings. The mine was also reasonably well drained. The main headings have been cut out by a sand rock fault during the latter part of the year, and boring from the surface was being done, to ascertain the probable thickness of same, but in all probability it will shorten the life of this mine very much.

Sandy Lick.—This is part of the Rochester Mine, but has a separate haulage, and is independently ventilated. Only a few persons were employed, who were mining out the remaining pillars. On each of my visits, I found the mine in a reasonably good condition for ventilation and drainage.

Williamsport No. 2.—This mine has not been in a very satisfactory condition for ventilation during the year. The new hauling road made during the year, is also being used for an intake airway. It was thought by the management, that when this had been done, the question of ventilation would be solved, I however had no faith in it, believing that power is necessary as well asairways. However, the airway is in line with the improvements necessary, and if a fan of ample capacity is provided, and placed at a point more in line with the present workings, some improvement may be expected.

Williamsport No. 6.—The condition of this mine for ventilation, throughout the year was fair. The small Stine fan was giving fair results, but the volume of air at the face of some parts of the workings was rather sluggish and the headings were somewhat smoky.

Fairmount No. 1.—This mine is located on the Tyrone and Clearfield Branch of the Pennsylvania Railroad. During the past year it was transferred from the Eighth district to this district, and is at present operated by the Harbison Walker Company. On my inspections, I have found it in a reasonably good condition for ventilation and drainage.

Raybold No. 2.—This is a small operation, with only a few persons employed. Some defects were found in the ventilation and drainage, which can be attributed to the frequent changes of mine foremen. I having found a new man at each of my visits.

Grampian No. 1.—A lawful volume of air was found on the return near the furnace, but it was not being properly conveyed to the working faces; other conditions could not be complained of. Frequent changes of mine foremen here is a great hindrance to keeping the mine in a good sanitary condition.

Clearfield No. 10.—Is a small opening, and coal for domestic purposes only is mined, and but few persons are employed, especially during the summer months, when fewer than ten persons are employed. The condition of the mine for ventilation is only fair.

Moravian, Pleasant Hill, Grass Flat and Knox Run mines are located on the New York Central and Hudson River Railroad near the town of Peale, and are operated by the Clearfield Bituminous Coal Corporation, and have been operated very steadily during the year. The condition of the Moravian mine was good. A furnace is located near the face of the workings, which was producing a lawful volume of air, which was being reasonably well conveyed to the face of the headings. Considerable work has been done during the year in draining the workings, by cutting a drain to the Pleasant Hill mine. The Pleasant Hill mine was in good condition on each inspection. A good volume of air was being provided, which was reasonably well conducted through the headings. Some defects were found in drainage which is difficult to maintain, owing to the irregularity of grade of the seam. The Grass Flat mines are ventilated by two furnaces and a fan. The No. 10 opening is quite extensive, and a long tail rope system of haulage is used to convey coal to the surface. A lawful volume of air, was being provided, which was well conducted around the workings. The No. 9 opening, has a good volume of air in circulation. Some difficulty is experienced in this mine with water, consequently some defects were found in the drainage. The No. 11 drift was in a very fair condition generally. The Knox Run No. 1 drift is in very fair condition for ventilation, but if the furnace were located at some point where a greater depth of shaft would be obtained, it would improve the ventilation very much. The No. 2 drift was found in fair condition for ventilation and drainage.

Brittanic Mine.—A new furnace was built during the year, and the condition of the mine improved thereby. No work was done in this mine for several months, owing to the change of grade on the railroad in the vicinity of the tipple.

Mt. Carmel.—Did not have a sufficient number of employes during the year to come under the law, but was inspected and found in good condition.

Mosquito Mine.—This mine changed hands during the year, and is now operated by Matt. Shadick. Its condition for ventilation and drainage is not good, but I expect that some improvements will be made by the new owners.

Meyers Run.—This mine was in good condition generally.

Centre County Mines.

Sugar Camp Nos. 2-4-7 and 12.—These openings were in a very fair condition. They are ventilated by two furnaces which produced a good volume of air, which was being well conveyed to the face of the workings. Drainage was also good.

Sugar Camp Nos. 5 and 8.—The ventilation in the No. 5 was not up to the required standard, the furnace being too far from the present workings, and there were too many doors in use. Some changes were being made on my last visit, which will improve the ventilation. Only a few persons were employed in the No. 8 opening, but it was in very fair condition.

Sugar Camp Nos. 9-10 and 11.—These openings are ventilated by three furnaces, which were producing good volumes of air, which was being conveyed to the workings in sufficient quantities to keep them in a healthful condition. The drainage was also well looked after.

Cato Mine.—Is a small operation and but few persons employed. The ventilation and drainage is not up to the required standard, but I hope to find some improvement on my next visit.

Cherry Run.—The airways in this mine are not kept up as they should be, and in consequence the ventilation is defective in some parts of the mine. The drainage was somewhat improved on my last visit.

Snow Shoe Nos. 4 and 5.—On my first visit to the No. 4 mine, I found that the brattices in one part of the mine had become worthless from long use, but they have since been renewed, and the ventilation improved. The No. 5 drift was found in a reasonably good condition for ventilation and drainage.

Clinton County Mines.

Kettle Creek Nos. 1-2 and 3.—The No. 1 drift is ventilated by a furnace that was producing a lawful volume of air, which was being conveyed around the workings in sufficient quantities to keep them in a reasonably good condition. The Nos. 2 and 3 drifts are ventilated by a fan, which is run by a steam engine; the gas engine formerly used has been dispensed with, and much better results are obtained. The seam here is sufficiently high to make large airways, and a good volume of air is produced with a low water gauge, which is reasonably well conducted throughout the workings. Some trouble has been experienced from water during the latter part of the year, caused by heavy rains, and in consequence the workings were rather wet on my last visit. There had been no idle time at these mines during the entire year.

Elk County Mines.

Dagus No. 1.—The tipple at this mine, together with the engine and boiler rooms, were destroyed by fire on December 17. The fire was supposed to have originated in the boiler room in some unknown manner. Rebuilding was at once begun, and the company expect to be ready to resume work by March 1, 1902. The condition of this mine on my last visit was good. The workings were reasonably well ventilated and drained.

Dagus No. 3.—Preparations were being made at this mine to install rope haulage in the dip workings and a side track in the mine was about completed, and some outside work was in progress. The mine was as usual in good condition.

Eureka Slope.—This mine was found in a fair condition during the entire year. A reasonably good current of air was being conducted throughout the workings, and the drainage could not be complained of. The south face headings were being driven towards No. 19 drift, and when cut through, a furnace in the latter opening, will be utilized to ventilate the workings on the south side of the mine, which will improve the conditions very much.

Clarion No. 27.—This mine was found in good condition on each visit during the year. The air current was well conducted, and the workings very well drained.

Clarion No. 29.—The use of coal cutting machines has been done away with in this mine, as the work is confined almost entirely to the drawing of pillars, at which work it is impracticable to use machines. The mine is supplied with a fair volume of air, which is very well conducted through the workings.

Shawmut Nos. 1-3 and 4.—These openings were found in a reasonably good condition throughout the year, considering that mining is wholly confined to pillar drawing. They were in good condition as regards ventilation and drainage.

Shawmut No. 5.—Some improvement has been made by increasing the width of the hauling roads during the year, which were too narrow for the use of electric motors, making it dangerous, and also retarding the air current to a great extent. The condition of the mine generally is being improved by the present management.

Shawmut No. 6.—A washout was encountered in the main south headings cutting out nearly the entire vein, leaving a deposit of sand and gravel. At considerable expense and labor a heading has been driven through it, where coal has been again found at its normal height, and a shaft is being sunk for ventilation in this part of the mine. A new generator has been installed, and preparations are being made to use electric motors in hauling coal from the headings, to the bottom of slope. The mine is in good condition for ventilation, but the drainage was somewhat defective on the hauling roads when last visited.

Shawmut No. 8.—An air shaft 8′x8′ in the clear has been sunk during the year, and a sixteen foot diameter Guibal fan has been placed thereon, and the mine now ranks among the best in the district for ventilation. This is the only proper method of ventilating mines, especially those in which coal cutting machinery is used.

Shawmut No. 9.—Only a very few persons were employed in this mine during the year, but its condition for ventilation and drainage was good.

Shawmut No. 10.—A lawful volume of air was measured in this mine, which was defective in some of these headings; owing to the number of splits the velocity of the current was rather weak. Other conditions were good.

Mead Run No. 2.—On my last visit only five persons were employed but it was in fair condition.

Mead Run No. 4.—This mine on each visit was in very fair condition for ventilation and drainage.

Hazel Dell.—During the summer months not much work is done in this mine, and but few persons employed. Its condition for ventilation and drainage is fair.

Byrne Nos. 1-2 and 3.—The condition of this mine has been good throughout the year. Two furnaces produce ventilation, and a good current has been found on each visit. The field here is quite extensive, and a fan will be necessary in the near future, to insure ample ventilation. The main No. 1 heading, which is the lowest part of the workings is being pushed as rapidly as possible to the Caledonia side of the mountain for the purpose of drainage where a system of rope haulage will be installed.

Winslow No. 31.—This mine was opened during the year and is a drift opening. Two drifts were opened the distance required by law, and the double entry system, with room and pillar is the plan of mining. A furnace is provided for ventilation, and while no complaints can now be made regarding air, yet the furnace at its present location will not suffice for future developments. The "B" or Lower Kittanning seam is being mined here.

Cardiff Nos. 1 and 2.—These are new mines opened during the year on the double entry, and room and pillar system in the Lower Kittanning seam. Each opening is provided with a furnace for ventilation, and on my visit a reasonably good volume of air was circulating through the workings.

Jefferson County Mines.

London.—Coal cutting machinery is almost exclusively used in this mine, there being but a very small percentage of the production mined by pick, consequently a large volume of air is necessary to keep the workings clear of powder smoke. The Capell fan installed during the year 1900, is producing a very good volume of air, which was being conducted in three separate currents, and was conveyed to the workings in sufficient quantities to meet requirements. The drainage could not be complained of.

Pancoast.—But few persons were employed in this mine on my last visit, but the mine was in fair condition for ventilation and drainage.

Coal Glen No. 1.—Some defects were found in ventilation, in the new drift which can be attributed to the use of compressed air the power used in running the fan engine, which is very unreliable. As this opening becomes developed, the ventilating apparatus will have to be strengthened so as to insure a regular current of air. The other drifts are in very fair condition for ventilation and drainage.

Coal Glen No. 2.—This opening was in fair condition for ventilation and drainage.

Beechtree No. 2.—Only a few persons are employed in this mine, who are engaged in removing the main pillars. The ventilation was sufficient to meet the requirements.

West Clarion No. 1.—There is nothing new to report regarding the mine, only that it was in its usual good condition.

West Clarion Nos. 3 and 6.—A new water-course was driven to the surface, which dispensed with considerable labor, and expense in pumping. The roof over part of the mine is very tender, and it requires great care on the part of the officials, and the miners to prevent accidents. The mine is very well ventilated and drained. A new opening was made during the year, known as the No. 6. It is opened on the double entry system and ventilated by a furnace of ample capacity.

Brock.—Two furnaces are in use at this mine, and a lawful volume of air is being provided, which was very well conducted to the working faces. The mine was well drained.

Rattlesnake Run.—This mine is in very fair condition as to ventilation and drainage.

Lycoming County Mines.

Red Run No. 2.—The vein being mined here is very low, and in consequence the airways are small in sectional area. A lawful volume of air can always be measured in the mine, but some of the workings do not have sufficient to keep them in the best condition. The drainage is always good.

Red Run No. 7.—The vein here is also very low, and the same fault can be found as in the No. 2 mine, but some improvement has been made by increasing the size of overcasts and in cleaning up the airways. The drainage is very good.

McKean County Mines.

Lyman.—On my last visit only a few persons were employed, and it has been idle a great part of the year. Its condition for ventilation and drainage is fair. The Instanter mine was idle at the time of my last visit, and I understand it has been abandoned since, and the track taken out of the mine.

Tioga County Mines.

Arnot No. 1.—The ventilation in this mine has been improved during the year and the officials in charge are doing all that can be done, with the means at hand to produce a lawful volume of air. The furnace at its present location is entirely inadequate to meet the requirements. The drainage is in fair condition.

Arnot No. 2.—This mine is ventilated by natural means, and the conditions are very favorable for such, but it is too unreliable and not in accordance with the law. A shaft has been enlarged and retimbered and a fan will be installed in the near future, which will provide ample ventilation. It is reasonably well drained.

Arnot Nos. 3 and 5.—A new haulage road has been laid on the east side of the mine, where pillars are to be removed. Ventilation and drainage are very good.

Arnot No. 7.—Nothing new can be reported concerning this mine, except that it is well looked after. It was in good condition as to ventilation and drainage.

Bear Run.—This mine on each visit has been in a very fair condition. An opening is being driven from No. 15 left heading to the surface, for the purpose of ventilation, which when completed will remedy the defect in ventilation in this part of the mine.

Maple Hill.—Has been idle nearly the entire year. When I last visited it, it was in a very fair condition.

Jones No. 1.—Is in a fair condition, some defects were found in ventilation on my last visit in some of the headings, yet there is a lawful volume of air provided, but a good part of it is lost through the brattices before it reaches the workings. The slope still continues to be driven to the Seymour vein and will soon reach that seam of coal, when it will be mined.

New Mine.—There is nothing of importance to report concerning this mine, as it is in its usual condition, regarding ventilation and drainage.

Antrim No. 1.—This mine still continues to give off considerable black damp from the old workings, but some improvement has been made to prevent it from vitiating the air, by bratticing. There is a fair volume of air circulating through the mine, and the drainage is also fair.

Antrim No. 5.—The direction of the air current in this mine, was changed during the early part of the year to prevent it from being contaminated by black damp, which is very prevalent. This change, while it did not meet my expectations, proved very beneficial, as the air current was much purer than formerly. The condition of the mine generally was fair.

Anna "S" Mine.—The company has during the past year been engaged in reopening this mine, which is located a little more than three-fourths of a mile from the No. 1 mine tipple, in a westerly direction. A valley 425 feet deep lies between the mine, and tipple, over which the coal will be conveyed by an aerial wire rop tramway system, a description of which is given in another part of this report. When I visited the mine, but few persons were employed, and no system of ventilation had been established, but preparations were being made to install a fan, which has since been completed.

Bradford County Mines.

Long Valley No. 3.—The condition of this mine for ventilation and drainage, on each of my visits was good.

Examination of Candidates for Mine Foremen and Fire Bosses Certificates.

The annual examinations of applicants for certificates of competency for mine foreman and fire bosses, as per act of Assembly approved May 15, 1893, was held in this district in the month of January of each year, from 1893 to 1901 inclusive. The board of examiners was composed of the Mine Inspector of the district; George L. Miller, superintendent, and James C. Hadley, mine foreman. During those years 164 applicants were examined, and the following named persons were granted certificates:

First Grade Certificates.

John Britt, Clarion; John McNulty, South Fork; John W .Donaldson, South Fork; James Craig, Elenora; John Reed, DuBois; Anton Hardt, Wellsboro; D. B. Dunsmore, DeLancy; Josiah Gregory, DeLancy; Hugh Reynolds, DuBois; William Reed, DuBois; John Hurley, Fayette; Timothy McCarthy, DuBois; John Clark, DuBois; J. C. McDermott, DuBois; James Harvey, DuBois; John Harrison, DuBois; George Brown, DuBois; Thos. D. Reed, DuBois; Robert North, DuBois; John Pendelton, Crenshaw, W. H. H. Miller, Bitumen.

Second Grade Certificates.

Danl. T. Jenkins, Blossburg; Thos. S. Heron, Arnot; John Sheenhen, Patton; James Brownlee, Red Run; Andrew Sperce, Bernice; David Simpson, William Reed, DuBois; John B. Ryan, DuBois; John E. Burns, DuBois; Chas. Hill, ; Archie Donaldson, Crenshaw; Alex. Pride, Arnot, Wm. B. Gilmore, Blossburg; James Adamson; James F. Keating, Clermont; J. F. Fuge, Walston; Robt. Quigley, Westville; John Quigley, Westville; James F. Cleary, Beechtree; Chas. Hill, Helvetia; David Trout, Coal Glen; Wm. H. Patterson, Tyler; James Forsythe, Glen Richey; David T. Riordan, Arnot; Robt. Guy, Bernice; Arnold Hurst, Antrim; Jas. F. Ward, Ehrenfeld; J. E. Ashley, Lindsay; T. R. Johns, Walston; H. S. Rogers, Spangler; Edward Nichlinson, Hastings; A. J. Johnson, DeLancy; Ernest Coupe, Antrim; John M. Jones, Coal Glen; Robt. Christy, Arnot; Lawson Blankinsepp; Samuel Walwork; Rees James; Alexander Stewart, DeLancy; H. P. Kelly, Snowshoe; Thomas Stratten; R. J. Makan; James Moran; William E. Dayton; John F. Nelson, Arnot; Geo. Nichlinson, Hastings; William Nichlinson, Hastings; E. R. Musser; John M. Cowan, Antrim; John Clifford, Antrim; Hugh Gibb, Walston; Fred. Norman, Brockwayville; James P. Fleming, Kersey; R. M. Ent, Brockwayville; John T. Jones, Punxsutawney; Alexander Penman, Westville; James Jones, Cartwright; James Heaney; Cataract; John R. Hayes, Glen Campbell; W. C. Smith, Glen Glade; James A. Shaw, Blossburg; James Ewing, Wishaw; D. J. Lewis, Helvetia; Joseph Madill, Anita; James Turnbull; Ira Williams; John W. Ditchburn; Thos. Fish; John McFarlane, Arnot.

Fire Boss Certificates.

Hugh Reynolds, Red Burn; Timothy McCarthy, DuBois; A. L. Christian, DuBois; Archie Donaldson, Crenshaw; Robert North; William Chick; Joseph Kennedy, DuBois; James Pratt, DeLancy; Chas. S. Cowie, Punxsutawney; John Wallace, DeLancy; George Brown, Falls Creek; Thomas Hamilton, Elenora; Alexander Wise, DeLancy; William Haddick, Punxsutawney; William Ledger; Alfred Dawson, DuBois; James Harvey, DeLancy; John Hall, Walston.

Each session of the board was held in the court house, Williamsport, the last session having been held on January 2d. 3d and 4th, 1901. There were thirty-two applicants examined, twenty-one of whom were successful, three of them obtaining certificates of first grade, and seventeen second grade; one fire boss certificate was also issued. The names of the successful applicants at this examination are all included in the above list.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and location of collieries in the Fourth Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
North Western Mining and Exchange Co.						
Dagus No. 1,	Elk,	Joseph Bailey,	Brockwayville,	Joseph Bailey,	Brockwayville,	Erie.
Dagus No. 3,	Elk,	Joseph Bailey,	Brockwayville,	Joseph Bailey,	Brockwayville,	Erie.
Eureka slope,	Elk,	Joseph Bailey,	Brockwayville,	Joseph Bailey,	Brockwayville,	Erie.
Clarion Nos. 27 and 29,	Elk,	Joseph Bailey,	Brockwayville,	Joseph Bailey,	Brockwayville,	Erie.
West Clarion Nos. 1, 3 and 6,	Jefferson,	Joseph Bailey,	Brockwayville,	Joseph Bailey,	Brockwayville,	Erie.
Rattlesnake Run,	Jefferson,	Joseph Bailey,	Brockwayville,	Joseph Bailey,	Brockwayville,	P. R. R. R. and C. Branch.
Jefferson and Clearfield Coal and Iron Co.						
Rochester,	Clearfield,	L. W. Robinson,	Punxsutawney,	John Reed,	Reynoldsville,	R. & F. C. Branch B. R. & P.
London,	Jefferson					
Pancoast,	Jefferson,					
Sandy Lick,	Clearfield,					
Clearfield Bituminous Coal Corporation.						
Grass Flat,	Clearfield,	R. A. Shillingford,	Clearfield,	R. A. Shillingford,	Clearfield,	N. Y. C. & H. R. R. R.
Knox Run,						
Pleasant Hill,						
Moravian,						
Shawmut Mining Co.						
Shawmut No. 1,	Elk,			Henry Redding,	Shawmut,	Pittsb'g, Shawmut & Northern
Shawmut No. 5,						
Shawmut No. 6,						
Shawmut No. 8,						
Shawmut No. 9,						
Shawmut No. 10,						
Mead Run No. 2,						
Mead Run No. 4,						
Lehigh Valley Coal Co.						
Sugar Camp No. 2,	Centre,	S. D. Warriner,	Wilkes-Barre,	J. F. Marsteller,	Snow Shoe,	Pennsylvania Railroad.
Sugar Camp No. 4,						
Sugar Camp No. 5,						
Sugar Camp No. 7,						
Sugar Camp No. 8,						
Sugar Camp No. 9,						
Sugar Camp No. 10,						
Sugar Camp No. 11,						
Sugar Camp No. 12,						

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Berwind White Coal Mining Co.						
Berwind shaft,	Clearfield,	Thos. Fisher,	Philadelphia,	A. J. Cook,	DuBois,	Pennsylvania Railroad.
Cataract,	Clearfield,	Thos. Fisher,	Philadelphia,	A. J. Cook,	Bellefonte,	Pennsylvania Railroad.
Blossburg Coal Co.						
Arnot No. 1, Arnot No. 2, Arnot No. 3, Arnot No. 5, Arnot No. 7, Bear Run, Maple Hill,	Tioga,	F. B. Lincoln,	Arnot,	F. B. Lincoln,	Arnot,	Tioga Div., Erie R. R.
Morris Run Coal Mining Co.						
Jones No. 1,	Tioga,	W. S. Nearing,	Morris Run,	W. S. Nearing,	Morris Run,	N. Y. C. & H. R. R. R.
New Mine No 2,	Tioga,	W. S. Nearing,	Morris Run,	W. S. Nearing,	Morris Run,	N. Y. C. & H. R. R. R.
Kettle Creek Coal Mining Co.						
Kettle Creek No. 1,	Clinton,	Geo. L. Miller,	Bitumien,	James Ward,	Bitumien,	S. & B. R. R.
Kettle Creek Nos. 2 and 3,	Clinton,	Geo. L. Miller,	Bitumien,	James Ward,	Bitumien,	S. & B. R. R.
Jefferson Coal Co.						
Coal Glen No. 1, Coal Glen No. 2, Beechtree No. 2,	Jefferson,	Austin Blakeslee,	Coal Glen,	Austin Blakeslee,	Coal Glen,	Buffalo, Rochester & Pittsburg.
Magee and Ellsworth.						
Antrim No. 1, Antrim No. 5, Anna "S" mine,	Tioga,	William Howell,	Corning, N. Y.,	James Pollock,	Antrim,	N. Y. C. & H. R. R. R.
Frank Williams & Co.						
Williamsport No. 2,	Clearfield,	J. G. Dunsmore,	Tyler,	J. G. Dunsmore,	Tyler,	Pennsylvania Railroad.
Williamsport No. 6,	Clearfield,	J. G. Dunsmore,	Tyler,	J. G. Dunsmore,	Tyler,	Pennsylvania Railroad.
Red Run Coal Co.						
Red Run No. 2, Red Run No. 7, Red Run No. 8,	Lycoming,	D. B. Allison,	Roaring Branch,	D. B. Allison,	Roaring Branch,	Northern Central R. R.
Joseph H. Reilly & Co.						
Brock,	Jefferson,	Jno. E. Reilly,	Brockwayville,	Jno. E. Reilly,	Brockwayville,	Pennsylvania Railroad.
Hall & Kaul.						
Hazel Dell,	Elk,	Andrew Kaul,	St. Marys,	Andrew Kaul,	St. Marys,	Pittsb'g, Shawmut & Northern.

Harbison Walker Co. Fairmount,	Clearfield,	H. M. Kurtz,	Woodland,	J. M. Baker,	Woodland,	Pennsylvania Railroad.
Matt Schadeck. Mosquito Creek Mine.	Clearfield,			Matt Schadeck,	Karthaus,	Pennsylvania Railroad.
Long Valley Coal Co. Long Valley No. 3,	Bradford,	O. A. Baldwin,	Towanda,	R. E. Dunston,	Towanda,	Barclay Railroad.
W. F. Holt. Cherry Run,	Centre,	W. F. Holt,	Philipsburg,	W. F. Holt,	Philipsburg,	Pennsylvania Railroad.
Rochester and Pittsburg Coal and Iron Co. Helvetia No. 2,	Clearfield,	L. W. Robinson, Pres. & Gen. Mgr. A. H. Bowman, Asst. Gen. Mgr.	Punxsutawney, Punxsutawney,	T. S. Lowther,	Helvetia,	Buffalo, Rochester & Pittsburg.
J. F. Keating. Lyman,	McKean,			J. F. Keating,	Clermont,	W. N. Y. & P.
Instanter,	McKean,			J. F. Keating,	Clermont,	W. N. Y. & P.
A. G. Spears. Meyer Run,	Clearfield,			A. G. Spears,	Karthaus,	Pennsylvania Railroad.
Kersey Coal and Coke Co. Byrne Nos. 1, 2 and 3,	Elk,	Geo. S. Ramsey,	St. Marys,	R. Dawson Hall,	Weedville,	Pittsb'g, Shawmut & Northern.
Elk Coal and Coke Co. Elk No. 31,	Elk,	Geo. S. Ramsey,	St. Marys,	R. Dawson Hall,	Weedville,	Pittsb'g, Shawmut & Northern.
Cardiff Coal and Coke Co. Cardiff No. 41,	Elk,	Geo. S. Ramsey,	St. Marys,	T. G. Mathews,	Weedville,	Pittsb'g, Shawmut & Northern.
Kelly & Nugent. Cato,	Centre,			L. Nugent,	Snow Shoe,	N. Y. C. & H. R.
Isaac Stage. Clearfield No. 10,	Clearfield,			Isaac Stage,	Clearfield,	None.
Kelley Bros. Snow Shoe No. 4,	Centre,	M. D. Kelley,	Snow Shoe,	H. P. Kelley,	Snow Shoe,	Pennsylvania Railroad.
Snow Shoe No. 5,	Centre,	M. D. Kelley,	Snow Shoe,	H. P. Kelley,	Snow Shoe,	Pennsylvania Railroad.
Estate of W. J. Jackson. Grampian No. 1,	Clearfield,	A. Jackson,	Grampian,	Edward Hughs,	Grampian,	Pennsylvania Railroad.
Karthaus Coal Mining Co. Brittanic,	Clearfield,			George Rees,	Karthaus,	Pennsylvania Railroad.
M. Burns. Raybold No. 2,	Clearfield,			M. Burns,	Brisbin,	Pennsylvania Railroad.

TABLE II—Gives the total number of tons of coal mined and tonsof coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Fourth Bituminous District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number of days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Jefferson and Clearfield Coal and Iron Co.														
Rochester, Sandy Lick,	Clearfield,	322,593	......	......	322,593	......	......	216	387	......	1	......	......	31
London,	Jefferson,	435,560	......	......	435,560	......	......	225	447	......	......	......	......	39
Pancoast,	Jefferson,	39,170	......	......	39,170	......	......	202	25	......	4	......	......	3
Total,	......	797,323	......	......	797,323	......	......	214.3	859	......	5	......	......	73
N. W. Mining and Exchange Co.														
Dagus No. 1, Dagus No. 3, Eureka slope,	Elk,	341,198	5,614	2,604	349,416	......	......	205.7	627	1	......	2,575	4,750	46
Clarion No. 27, Clarion No. 29,	Elk,	198,277	598	1,483	200,358	......	......	213.4	348	......	......	1,600	100	36
West Clarion No. 1, West Clarion No. 3, West Clarion No. 6,	Jefferson,	187,259	1,046	261	188,566	......	......	225.4	240	1	1	1,800	1,236	23
Rattlesnake Run,	Jefferson,	68,391	29	7	68,427	......	......	159.9	103	......	......	600	......	5
Total,	......	795,125	7,287	4,355	806,767	......	......	201.1	1,318	2	1	6,575	6,086	110

Clearfield Bit. Coal Corporation.														
Grass Flat No. 9, Grass Flat No. 10, Grass Flat No. 11,	Clearfield,	149,204	784	991	193,449	20,847		273	276	......	1	1,840	700	19
Knox Run No. 1, Knox Run No. 2,	Clearfield,	134,102	....	223	134,325	20	150	246	227	......	......	2,280	900	13
Pleasant Hill,	Clearfield,	136,611	150	1,600	138,361	....	......	249	229	......	......	1,200	125	17
Moravian,	Clearfield,	115,712	....	190	115,902	368	......	250	189	......	1	1,668	800	12
Total,	....	535,629	934	3,004	582,037	21,235	150	254.5	921	......	2	6,988	2,525	61
Shawmut Mining Co.														
Shawmut No. 1,	Elk,	41,751	12	4,030	45,793	....	....	200	62	......	......	390	....	7
Shawmut No. 5,	Elk,	82,747	2,575	561	85,883	....	....	220	125	......	......	505	125	......
Shawmut No. 6,	Elk,	82,587	2,778	....	85,365	....	....	225	128	......	......	429	1,150	15
Shawmut No. 8, Shawmut No. 9, Shawmut No. 10,	Elk,	144,844	5,002	1,933	151,779	....	....	206	229	1	......	1,043	240	2
Mead Run Nos. 2 and 4,	Elk,	91,790	34	142	91,966	....	....	183	138	......	......	837	100	26
Total,	....	443,719	10,401	6,666	460,786	....	....	206.8	682	1	......	3,204	1,615	50
Blossburg Coal Co.														
Arnot No. 1,	Tioga,	47,003	250	400	47,653	....	....	133	133	......	......	....	....	9
Arnot No. 2,	Tioga,	49,694	350	550	50,594	....	....	133	178	......	1	....	....	12
Arnot No. 3,	Tioga,	63,137	950	750	64,837	....	....	139	149	......	......	....	....	12
Arnot No. 5,	Tioga,	73,215	1,100	1,250	75,565	....	....	139	232	......	......	....	....	18
Arnot No. 7,	Tioga,	26,241	275	....	26,516	....	....	142	88	......	......	....	....	6
Bear Run,	Tioga,	92,591	1,853	192	94,636	....	....	132.2	276	......	......	....	....	2
Maple Hill,	Tioga,	2,626	....	....	2,626	....	....	205	21	......	......	....	....	2
Total,	....	354,507	4,778	3,142	362,427	....	....	146.2	1,077	......	1	....	....	61
Lehigh Valley Coal Co.														
Sugar Camp No. 2,	Centre,	321,129	1,247	1,456	323,832	....	200	198.8	435	1	3	24	2,500	35
Sugar Camp No. 3,	Centre,	87,492	230	79	87,801	....	....	161.1	104	......	......	6	500	5
Total,	....	408,621	1,477	1,535	411,633	....	200	180	539	1	3	30	3,000	40
Berwind-White Coal Mining Co.														
Berwind shaft,	Clearfield,	220,981	18,009	11,918	250,908	....	....	231	288	......	11	1,250	7,500	20
Cataract,	Clearfield,	29,516	672	....	30,188	....	....	217	43	......	1	400	....	12
Total,	....	250,497	18,681	11,918	281,096	....	....	224	331	......	12	1,650	7,500	32
Jefferson Coal Co.														
Coal Glen No. 1, Coal Glen No. 2,	Jefferson,	233,000	2,700	1,300	237,000	....	....	269	293	......	3	2,000	30	......
Beechtree No. 2,	Jefferson,	52,000	....	....	52,000	....	....	257.4	42	......	......	350	4	......
Total,	....	285,000	2,700	1,300	289,000	....	....	263.2	335	......	3	2,350	34	......

TABLE II— Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number of days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Magee & Ellsworth.														
Antrim No. 1,	Tioga,							215	120					8
Antrim No. 5,	Tioga,	161,644		1,414	163,058			220.8	217	3	3			13
Anna "S,"	Tioga,							152	49					1
Total,		161,644		1,414	163,058			195.9	386	3	3			22
Morris Run Coal Mining Co.														
Jones No. 1,	Tioga,	327,355	2,000	4,237	333,582			261.1	750	1	5	9,500	400	109
New Mine No. 2,	Tioga,										1			
Total,		327,355	2,000	4,237	333,582			261.1	750	1	6	9,500	400	109
Kettle Creek Coal Mining Co.														
Kettle Creek No. 1, Kettle Creek Nos. 2 and 3,	Clinton,	306,228			306,228			319.1	351	2	2	2,681	200	40
Red Run Coal Co.														
Red Run No. 2, Red Run No. 7, Red Run No. 8,	Lycoming,	105,320	800	975	107,095			257.3	225	1		3,826	580	2
Frank Williams & Co.														
Williamsport No. 2, Williamsport No. 6,	Clearfield,	101,678	2,142	1,036	151,675	23,141	100	271.5	287		1	1,050	300	17
Joseph H. Reilly & Co.														
Brock,	Jefferson,	102,204	1,142	501	103.847			229.2	209			800	400	3
Kelly & Nugent.														
Cato,	Centre,	11,948		100	12,048			201	21			120	50	3

Rochester and Pittsburg C. & I. Co. Helvetia No. 2,	Clearfield,	187,617	14,779	1,980	204,376	....	40	239	267	......	2	1,600	6,000	29
Hall & Kaul. Hazel Dell,	Elk,	12,006	50	7,186	19,242	....	....	286.8	39	......	......	....	....	4
Harbison Walker Co. Fairmount,	Clearfield,	12,844	....	....	12,844	....	....	142.8	22	......	1	....	....	2
Matt. Schadeck. Mosquito Creek,	Clearfield,	9,126	75	50	9,251	....	....	111	30	......	......	60	300	2
Long Valley Coal Co. Long Valley No. 3,	Bradford,	21,559	253	547	22,359	....	....	167	57	......	......	910	....	9
W. F. Holt. Cherry Run,	Centre,	19,000	....	240	19,240	....	....	239	30	......	......	....	....	4
J. F. Keating. Lyman,	McKean,	4,500	....	144	4,644	....	....	235	18	......	......	15	1,200	2
Instanter,	McKean,	11,049	120	60	11,229	....	....	167	32	......	......	50	500	2
Total,	....	15,549	120	204	15,873	....	....	201	50	......	......	65	1,700	4
A. G. Spears. Meyer Run,	Clearfield,	13,285	20	....	13,305	....	....	200	43	......	......	200	....	5
Kersey Coal and Coke Co. Byrne No. 1, 2 and 3,	Elk,	154,104	....	....	154,104	....	50	265	337	2	......	....	....	24
Elk Coal Co. Elk No. 31,	Elk,	27,679	....	....	27,679	....	....	240	85	......	1	522	4,150	10
Cardiff Coal and Coke Co. Cardiff No. 41,	Elk,	19,615	....	....	19,615	....	....	259	79	......	......	298	3,900	12
Isaac Stage. Clearfield No. 10,	Clearfield,	....	....	10,186	10,186	....	....	278	22	......	......	....	....	2
Kelly Bros. Snow Shoe No. 4 and 5,	Centre,	50,000	20	475	50,495	....	....	215	105	......	......	190	310	6
Estate of W. J. Jackson. Grampian No. 1,	Clearfield,	21,558	845	95	22,498	....	....	236	45	......	......	150	50	5
Karthaus Coal Mining Co. Brittanic,	Clearfield,	9,000	....	100	9,100	....	....	160	32	......	......	....	....	3
Clearfield and Grampian Coal Co. Raybold No. 2,	Clearfield,	24,000	....	....	24,000	....	....	194	47	......	1	....	....	3
Grand total,	....	5,583,744	68,504	61,246	5,802,779	44,376	500	221.25	9,581	13	44	42,889	40,150	670

TABLE II—Continued.

Name of Operators.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Jefferson and Clearfield Coal and Iron Co.,	Clearfield & Jeff.,			21	2,400	2,400				5	800	4	16,500			6
North West Mining and Exchange Co.,	Elk & Jefferson,	4	50	8	800	850	2			11	765				2	
Clearfield Bituminous Coal Corporation,	Clearfield,			3	180	180				2	145					
Shawmut Mining Co.,	Elk,			8	1,000	1,000	1		9	11	1,591	17	3,500	1,850	5	1
Blossburg Coal Co.,	Tioga,			5	600	600	3		4	7	600				3	
Lehigh Valley Coal Co.,	Centre,			2	120	120	2				60	1	833			
Berwind-White Coal Mining Co.,	Clearfield,			9	1,200	1,200				4	345	3	8,000	3,000		2
Jefferson Coal Co.,	Jefferson,			1	20	20	3	1		3	100	5	600	500		1
Magee & Ellsworth,	Tioga,	6								9	625					
Morris Run Coal Mining Co.,	Tioga,			4	450	450				6	570					
Kettle Creek Coal Mining Co.,	Clinton,			1	30	30				1	30					
Red Run Coal Co.,	Lycoming,			2	120	120			3	2	325				2	
Frank Williams & Co.,	Clearfield,			6	500	500	1		2	8	546				1	
Joseph H. Reilly & Co.,	Jefferson,			2	120	120			2	1	76				1	
Kelly & Nugent,	Centre,															
Rochester and Pittsburg C. & I. Co.,	Clearfield,			10	1,020	1,020				4	290	3	3,200	2,200		2
Hall & Kaul,	Elk,															
Harbison-Walker Co.,	Clearfield,															
Matt. Schadeck,	Clearfield,															
Long Valley Coal Co.,	Bradford,			1	40	40	1			2	31					
W. F. Holt,	Centre,															
J. F. Keating,	McKean,						1			1	20					
A. G. Spears,	Clearfield,															
Kersey Coal and Coke Co.,	Elk,	2	150	1	50	200	2			7	175	2	300	100		
Elk Coal Co.,	Elk,									1	15					
Cardiff Coal and Coke Co.,	Elk,						1			1	20					
Isaac Stage,	Clearfield,															
Kelly Bros.,	Centre,															
Estate of W. J. Jackson,	Clearfield,															
Karthaus Coal Mining Co.,	Clearfield,															
Clearfield and Gramplan Coal Co.,	Clearfield,															
Grand total,		12	200	84	8,170	8,850	17	1	20	86	7,139	25	32,533	11,150	14	12

TABLE III—Showing the number of each class of employes at each colliery in the Fourth Bituminous District during the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, book-keepers and clerks.	All other employes.	Total outside.	Grand total, inside and outside.
Jefferson and Clearfield Coal and Iron Co.																		
Rochester, ... Sandy Lick, ...	Clearfield, ...	1	......	311	......	21	6	24	363	......	3	4	1	......	1	15	24	387
London, ...	Jefferson, ...	1	......	358	......	30	5	30	424	......	3	7	1	......	......	12	23	447
Pancoast, ...	Jefferson, ...	1	......	21	......	1	......	......	23	......	......	......	......	......	......	2	2	25
Total and average, ...	....	3	......	690	......	52	11	54	810	......	6	11	2	......	1	29	49	859
North Western Mining and Exchange Co.																		
Dagus No. 1, ... Dagus No. ,3 .... Eureka slope, ...	Elk, ...	4	......	495	......	28	2	25	554	1	13	7	......	......	6	46	73	627
Clarion No. 27, ... Clarion No. 29, ...	Elk, ...	3	......	259	......	25	......	7	294	1	8	2	......	......	5	38	54	348
West Clarion No. 1, ... West Clarion No. 3, ... West Clarion No. 6, ...	Jefferson, ...	2	......	166	......	18	......	27	213	1	4	1	......	......	2	19	27	240
Rattlesnake Run, ...	Jefferson, ...	1	......	86	......	5	......	2	94	......	1	......	......	......	1	7	9	103
Total and average, ...	....	10	......	1,006	......	76	2	61	1,155	3	26	10	......	......	14	110	163	1,318

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, book-keepers and clerks.	All other employes.	Total outside.	Grand total, inside and outside.
Clearfield Bituminous Corporation.																		
Grass Flat No. 9,	Clearfield,	1	......	220	14	13	4	2	254	1	3	2	......	......	1	15	22	276
Grass Flat No. 10,																		
Grass Flat No. 11,																		
Knox Run No. 1,	Clearfield,	1	......	184	9	12	4	2	212	1	2	......	......	......	1	11	15	227
Knox Run No. 2,																		
Pleasant Hill,	Clearfield,	1	......	190	8	12	4	1	216	1	1	......	......	......	1	10	13	229
Moravian,	Clearfield,	1	......	153	6	9	6	1	176	1	1	......	......	......	1	10	13	189
Total and average,	......	4	......	747	37	46	18	6	858	4	7	2	......	......	4	46	63	921
Shawmut Mining Co.																		
Shawmut No. 1,	Elk,	1	......	45	......	3	......	2	51	......	1	......	1	......	1	8	11	62
Shawmut No. 5,	Elk,	1	......	91	3	......	3	8	106	......	2	2	1	......	1	13	19	125
Shawmut No. 6,	Elk,	1	......	91	3	7	1	5	108	......	2	3	1	......	1	13	20	128
Shawmut No. 8,	Elk,	1	......	173	8	1	1	11	195	......	6	5	2	......	1	20	34	229
Shawmut No. 9,																		
Shawmut No. 10,																		
Mead Run No. 2,	Elk,	1	......	109	......	12	1	3	126	......	1	2	1	......	......	8	12	138
Mead Run No. 4,																		
Total and average,	......	5	......	509	14	23	6	29	586	......	12	12	6	......	4	62	96	682
Lehigh Valley Coal Co.																		
Sugar Camp No. 2,	Centre,	2	......	371	......	21	7	7	408	2	3	3	......	......	3	16	27	435

Sugar Camp No. 3,	Centre,	1	......	78	......	3	1	3	86	1	2	2	......	......	......	13	18	104
Total and average,		3	......	449	......	24	8	10	494	3	5	5	......	......	3	29	45	539
Berwind-White Coal Mining Co.																		
Berwind shaft,	Clearfield,	1	4	215	16	11	10	3	260	1	4	8	4	......	3	8	28	288
Cataract,	Clearfield,	1	......	33	......	3	2	1	40	......	1	......	1	......	......	1	3	43
Total and average,		2	4	248	16	14	12	4	300	1	5	8	5	......	3	9	31	331
Morris Run Coal Mining Co.																		
Jones No. 1,	Tioga,	1	......	479	......	62	28	30	600	1	7	4	20	......	7	6	45	645
New Mine No. 2,	Tioga,	1	......	74	......	10	6	4	95	......	2	......	4	......	......	4	10	105
Total and average,		2	......	553	......	72	34	34	695	1	9	4	24	......	7	10	55	750
Kettle Creek Coal Mining Company.																		
Kettle Creek Nos. 1, 2 and 3,	Clinton,	1	......	225	......	20	8	15	269	1	3	1	6	......	3	68	82	351
Jefferson Coal Co.																		
Coal Glen No. 1, Coal Glen No. 2,	Jefferson,	1	......	235	16	12	......	4	268	1	4	5	......	......	2	13	25	293
Beechtree No. 2,	Jefferson,	1	......	34	1	2	......	......	38	......	1	......	......	......	......	3	4	42
Total and average,		2	......	269	17	14	......	4	306	1	5	5	......	......	2	16	29	335
Magee & Ellsworth.																		
Antrim No. 1,	Tioga,	1	......	69	10	8	2	......	90	1	2	4	18	......	1	4	30	120
Antrim No. 5,	Tioga,	1	......	129	12	13	3	7	165	1	4	2	32	......	1	12	52	217
Anna "S" mine,	Tioga,	......	......	35	4	1	......	1	41	......	1	1	3	......	......	3	8	49
Total and average,		2	......	233	26	22	5	8	296	2	7	7	53	......	2	19	90	386
Blossburg Coal Co.																		
Arnot No. 1,	Tioga,	1	......	104	......	7	4	8	124	......	1	2	3	......	......	3	9	133
Arnot No. 2,	Tioga,	1	......	134	......	11	6	11	163	1	2	2	3	......	1	6	15	178
Arnot No. 3,	Tioga,	1	......	116	......	10	3	8	138	1	1	2	1	......	1	5	11	149
Arnot No. 5,	Tioga,	2	......	178	......	14	9	12	215	1	3	2	1	......	2	8	17	232
Arnot No. 7,	Tioga,	1	......	64	......	3	3	8	79	1	2	1	1	......	1	3	9	88
Bear Run,	Tioga,	2	......	223	......	......	3	14	242	1	4	6	1	......	2	20	34	276
Maple Hill,	Tioga,	1	......	14	......	2	1	1	19	......	......	......	......	......	......	2	2	21
Total and average,		9	......	833	......	47	29	62	980	5	13	15	10	......	7	47	97	1,077
Red Run Coal Co.																		
Red Run No. 2, Red Run No. 7, Red Run No. 8,	Lycoming,	2	......	145	11	......	2	15	175	......	5	1	8	......	3	33	50	225
Frank Williams & Co.																		
Williamsport No. 2, Williamsport No. 6,	Clearfield,	2	......	220	......	14	5	6	247	1	2	5	......	......	2	30	40	287

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of Coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Joseph H. Reilly & Co. Brock,	Jefferson,	1	......	185	......	6	1	2	195	......	3	2	......	......	1	8	14	209
R. & P. Coal and Iron Co. Helvetia No. 2,	Clearfield,	1	1	202	......	19	6	13	242	......	6	7	......	......	2	10	25	267
Hall & Kaul. Hazel Dell,	Elk,	1	......	24	2	4	4	......	35	......	1	......	......	......	1	2	4	39
Harbison Walker Co. Fairmount No. 1,	Clearfield,	1	......	18	......	1	......	1	21	......	......	......	......	......	......	1	1	22
Matt. Schadeck. Mosquito Creek,	Clearfield,	1	......	20	......	2	1	2	26	1	......	......	1	......	......	2	4	30
Long Valley Coal Co. Long Valley No. 3,	Bradford,	1	......	32	......	3	1	2	39	......	2	3	5	......	2	6	18	57
W. F. Holt. Cherry Run,	Centre,	1	......	25	......	2	......	......	28	......	......	......	......	......	1	1	2	30

J. F. Keating.																		
Lyman,	McKean,	1	......	12	.....		....	......	14	1	......	......	......	......	1	2	4	18
Instanter,	McKean,	1	......	23	......	.	.....	1	27	......	1	2	......	......	1	1	5	32
Total and average,		2	......	35	......	3	......	1	41	1	1	2	......	......	2	3	9	50
A. G. Spears.																		
Meyer Run,	Clearfield,	1	......	35	......	2	1	2	41	......	......	......	1	......	......	1	2	43
Kersey Coal and Coke Co.																		
Byrne Nos. 1, 2 and 3,	Elk,	1	......	229	......	20	3	8	261	1	4	4	......	......	2	65	76	337
Elk Coal Co.																		
Elk No. 31,	Elk,	1	......	54	......	5	1	5	66	......	1	......	......	......	1	17	19	85
Cardiff Coal and Coke Co.																		
Cardiff No. 41,	Elk,	1	......	43	......	5	......	3	52	1	1	1	......	......	1	23	27	79
Kelly & Nugent.																		
Cato,	Centre,	1	......	15	......	2	......	......	18	......	......	......	......	......	......	3	3	21
Isaac Stage.																		
Clearfield No. 10,	Clearfield,	......	......	13	......	2	......	......	15	......	......	......	......	......	1	6	7	22
Kelley Bros.																		
Snow Shoe Nos. 4 and 5,	Centre,	2	......	62	12	5	10	4	95	1	1	......	......	......	2	6	10	105
Estate of W. J. Jackson.																		
Grampian No. 1,	Clearfield,	1	... ..	35	......	2	1	......	39	1	1	......	......	......	4	......	6	45
Karthaus Coal Mining Co.																		
Brittanic,	Clearfield,	1	......	27	......	2	......	1	31	......	......	......	......	......	1	......	1	32
Clearfield and Grampian Coal Co.																		
Raybold No. 2,	Clearfield,	1	......	40	......	2	......	......	43	......	1	......	......	......	3	......	4	47
Grand total and Average,		66	5	7,221	135	511	169	352	8,459	28	127	105	121	......	79	662	1,122	9,581

TABLE III—Continued.

Names of Operators.	County.	Number of Days Worked in Each Month.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Jefferson and Clearfield Coal and Iron Co.,	Clearfield & Jeff.,	19	20.3	19.7	15	17	16.7	17.3	16	18	19	17.3	19	214.3
North Western Mining and Exchange Co.,	Elk and Jefferson,	20.9	14.5	16.8	20.6	16	12.8	18.8	15.2	12	15.8	17.4	20.3	201.1
Clearfield Bituminous Coal Corporation,	Clearfield,	24.8	23	25.2	23.5	19.8	18.5	17.7	14.8	22	21.7	22.5	21	254.5
Shawmut Mining Co.,	Elk,	21.6	12.8	17.8	19	20.9	19.5	15.4	13.9	14.8	15.5	17.6	18	206.8
Lehigh Valley Coal Co.,	Centre,	22.5	19.2	20.5	12.6	15.8	11.5	10.3	9.8	12.7	15.8	14	12.3	180
Berwind-White Coal Mining Co.,	Clearfield,	23	21	21.5	17	18	15.5	14.5	14	14	20	22.5	23	224
Morris Run Coal Mining Co.,	Tioga,	25.6	23 1	26	15.1	18.5	15	19.6	24.4	22.5	27	25	19.3	261.1
Kettle Creek Coal Mining Co.,	Clinton,	28.5	26.2	28.6	23.7	22	26.7	26	29.7	25	29.5	26.7	26.5	319.1
Jefferson Coal Co.,	Jefferson,	19.5	23	24.5	25	14.1	20.5	21.5	23.5	22.4	22.1	22.1	25	263.2
Magee & Ellsworth,	Tioga,	25.6	23.5	15.3	17.3	16	15.4	14.3	17	16.3	23.5	26	18.8	195.9
Blossburg Coal Co.,	Tioga,	22.7	22.6	12.1	11.3	10.7	8.7	11.4	10.7	9.8	7	8.7	16.5	146.2
Red Run Coal Co.,	Lycoming,	22.5	20	25.5	23.5	23.8	19	17	20	17	24	25.5	19.5	257.3
Frank Williams & Co.,	Clearfield,	26	23	24	25	24	22.5	18	17	21	25	24	22	271.5
Joseph H. Reilly & Co.,	Jefferson,	21.5	16.5	19.5	20	23.5	22	19.3	15.2	12.9	20.5	19.2	19.1	229.2
R. & P. Coal and Iron Co.,	Clearfield,	17	12	18	12	19	20	24	22	23	26	23	23	239
Hall & Kaul,	Elk,	22.5	24.3	24	21.3	25	24.7	20	26	25	25.7	22.8	23.5	286.8
Harbison Walker Co.,	Clearfield,	....	....	....	....	20 3	20	20.2	18.3	17.5	10	16.5	20	142.8
Matt. Schadeck,	Clearfield,	....	....	....	....	....	18	3	18	16	20	17	19	111
Long Valley Coal Co.,	Bradford,	25	21.5	24.5	17.5	12	2	5	6	11.5	16	15	11	167
W. F. Holt,	Centre,	24	21	22	18	18	17	16	18	20	22	22	21	239
J. F. Keating,	McKean,	23.5	22.5	24.5	21.5	23	22.5	22.5	....	17	26	21	20	201
A. G. Spears,	Clearfield,	17	17	12	12	13	12	5	15	21	25	26	25	200
Kersey Coal and Coke Co.,	Elk,	26	23	22	22	25	25	20	25	15	21	20	21	265
Elk Coal Co.,	Elk,	12	24	26	25	26	20	16	22	12	22	13	22	240
Cardiff Coal and Coke Co.,	Elk,	....	10	26	22	26	25	27	27	24	25	23	24	259
Kelly & Nugent,	Centre,	22	14	21	23	20	22	18	20	10	23	6	2	201
Isaac Stage,	Clearfield,	22	22	23	23	26	22	21	24	23	25	24	23	278
Kelley Bros.,	Centre,	20	18	20	16	16	14	14	18	16	20	22	21	215
Estate of W. J. Jackson,	Clearfield,	17	20	19	20	21	19	23	19	22	18	20	18	236
Karthaus Coal Mining Co.,	Clearfield,	23	22	24	21	25	25	20	....	....	....	....	....	160
Clearfield and Grampian Coal Co.,	Clearfield,	16	8	15	12	16	23	21	13	16	20	19	15	194
Average,	....	....	....	....	....	....	....	....	....	....	....	....	....	221.25

TABLE IV—List of fatal accidents that occurred in and about the mines of the Fourth Bituminous District for the year ending December 31, 1901.

Date of Accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Feb.	21	Joseph Congelius, ...	Italian, ...	Miner, ...	28	S.	....	....	Red Run, ...	Lycoming, ..	Fatally injured by a blast.
March	14	Nicola Dedadda, ...	Italian, ...	Miner, ...	28	M.	1	1	West Clarion, ...	Jefferson, ...	Fatally injured by side fall of slate.
April	4	Aaron L. Nelson, ...	Swede, ...	Miner, ...	23	S.	....	....	Kettle Creek, ...	Clinton, ...	Instantly killed by fall of coal.
	13	John J. Hughs, ...	Welsh, ...	Miner, ...	59	M.	1	5	Jones No. 1, ...	Tioga, ...	Fatally injured by fall of slate.
	19	Peter Gauzman, ...	Italian, ...	Miner, ...	31	M.	1	1	Byrne, ...	Elk, ...	Instantly killed by fall of coal.
May	14	Coolearier Angelo, ...	Italian, ...	Miner, ...	20	S.	....	....	Byrne, ...	Elk, ...	Instantly killed by fall of slate.
June	14	Thomas Taylor, ...	American,...	Miner, ...	40	W.	....	5	Antrim No. 5, ...	Tioga, ...	Instantly killed by mine cars.
	25	Frederick Nelson, ...	Swede, ...	Miner, ...	26	S.	....	....	Shawmut No. 8, ..	Elk, ...	Instantly killed by fall of slate.
July	20	Lewis Brosofsky, ...	Slav, ...	Miner, ...	22	S.	....	....	Kettle Creek, ...	Clinton, ...	Fatally injured by fall of coal.
	22	James Taylor, ...	American,...	Miner, ...	56	M.	1	3	Eureka slope, ...	Elk, ...	Fatally injured by fall of slate.
Oct.	1	John Sakel, ...	Hungarian,.	Miner, ...	41	M.	1	5	Sugar Camp No. 9,	Centre, ...	Instantly killed by fall of coal.
Dec.	24	Stacho Karchinskie,....	Pole, ...	Miner, ...	27	S.	....	....	Antrim No. 5, ...	Tioga, ...	Fatally injured by fall of roof slate.
	24	Patrick Wasnaick, ...	Pole, ...	Miner, ...	22	S.	....	....	Antrim No. 5, ...	Tioga, ...	

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Fourth Bituminous District for the year ending December 31, 1901.

Date of Accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	2	James Brand,	English,	Miner,	25	S.	Berwind shaft,	Clearfield,	Severely bruised by fall of roof slate.
	3	Samuel Rollinson,	English,	Miner,	27	M.	Berwind shaft,	Clearfield,	Injured internally by fall of slate.
	9	Joseph Olson,	Swede,	Miner,	28	S.	Berwind shaft,	Clearfield,	Severely injured by fall of slate.
Feb.	23	John Childs,	English,	Driver,	22	S.	New mine,	Tioga,	Leg fractured; caught between car and pillar.
	26	Louis Dolalovich,	Pole,	Miner,	22	S.	Berwind shaft,	Clearfield,	Back and side injured by fall of slate.
	28	John Curry,	Scotch,	Miner,	58	M.	Berwind shaft,	Clearfield,	Leg fractured by fall of slate.
March	6	Olundo Johnson,	Swede,	Miner,	39	M.	Berwind shaft,	Clearfield,	Back and head injured by fall of slate.
	22	William Bogle,	American,	Laborer,	37	M.	Berwind shaft,	Clearfield,	Back injured by fall of slate.
	26	J. B. Cookson,	English,	Miner,	45	S.	Fairmount No. 1,	Clearfield,	Leg fractured by fall of slate.
April	1	Charles Sholsky,	Slav,	Scraper,	21	S.	Helvetia,	Clearfield,	Cut on scalp and face by fall of slate.
	2	Martin Vaytos,	Slav,	Driver,	24	S.	Kettle Creek,	Clinton,	Leg fractured by mine cars.
	5	Samuel Rollinson,	English,	Driver,	27	M.	Berwind shaft,	Clearfield,	Leg sprained and Ankle dislocated by cars.
	6	John Bergeson,	Norwegian,	Miner,	26	S.	Antrim No. 5,	Tioga,	Leg fractured; run over by cars.
	22	John B. Ryan,	Irish,	Miner,	46	M.	Arnot No. 2,	Tioga,	Leg fractured by fall of fire clay.
June	5	Harry Mills,	American,	Miner,	20	S.	Raybold No. 2,	Clearfield,	Head injured by fall of coal.
	14	Oliver Taylor,	American,	Miner,	17	S.	Antrim No. 5,	Tioga,	Leg fractured; run over by cars.
July	11	Alexander Bronella,	Austrian,	Miner,	21	S.	West Clarion,	Jefferson,	Body and legs injured by fall of coal.
	12	John Vata,	Slav,	Rope rider,	19	S.	Helvetia,	Clearfield,	Collar bone fractured while attempting to jump off cars.
	17	Leonard Garthwalt,	English,	Miner,	52	M.	Rochester,	Clearfield,	Leg crushed by fall of coal; necessitating amputation.
	25	Enock Batkowski,	Pole,	Miner,	27	M.	Jones No. 1,	Tioga,	Leg fractured; caught between cars.
	26	Henry Wellock,	Pole,	Miner,	24	S.	Jones No. 1,	Tioga,	Severely injured by fall of coal.
Aug.	2	Andrew Johnjack,	Pole,	Miner,	34	M.	Jones No. 1,	Tioga,	Leg fractured by fall of slate.
	27	Mack Tarra,	Slav,	Miner,	25	S.	Moravian,	Clearfield,	Leg fractured; caught between cars.
	28	Adam Gallick,	Slav,	Miner,	37	M.	Sugar Camp No. 10,	Centre,	Leg fractured caught between cars and pillar.
	28	Richard Fulton,	American,	Driver,	30	M.	Berwind shaft,	Clearfield,	Injured internally; caught between cars and prop.
	31	L. J. Josephson,	Swede,	Miner,	44	M.	Grass Flat,	Clearfield	Hip fractured by fall of slate.
Sept.	6	James Duncan,	Scotch,	Door boy,	14	S.	Jones No. 1,	Tioga,	Leg fractured by cars.
	11	Chas. Hassel	American,	Miner,	34	M.	Pancoast,	Jefferson,	Severely burned by epxlosion of powder.

	11	Arnold Anderson,	American,	Miner,	16	S.	Pancoast,	Jefferson,	Severely burned by explosion of powder.
	17	Andrew Horendorsik,	Slav,	Miner,	20	S.	Kettle Creek,	Clinton,	Back and legs injured by fall of slate.
Oct.	3	Robinson Sherwood,	English,	Driver,	25	S.	Berwind shaft,	Clearfield,	Injured internally; crushed between car and roof.
	5	Lars Erickson,	Swede,	Miner,	41	M.	Antrim No. 5,	Tioga,	Arm fractured; struck by car which jumped the track.
	12	A. E. Liddle,	American,	Machine runner	22	S.	Berwind shaft,	Clearfield,	Arm fractured; crushed between machine and prop.
	23	Frank Maholtz,	American,	Driver,	17	S.	Williamsport,	Clearfield,	Leg severely bruised by cars.
	24	William Thompson,	English,	Miner,	28	M.	Coal Glen,	Jefferson,	Leg fractured by fall of slate.
Nov.	5	Seth Osburn,	American,	Miner,	19	S.	Coal Glen,	Jefferson,	Skull fractured by blast.
	5	Joseph Juramo,	Austrian,	Miner,	34	M.	Sugar Camp No. 5,	Centre,	Leg fractured by cars.
	8	John Conrod,	Slav,	Miner,	13	S.	Sugar Camp No. 5,	Centre,	Back injured by fall of coal.
	13	Bernard Morrison,	Irish,	Machine runner	21	S.	Pancoast,	Jefferson,	Spine injured by fall of coal.
	13	August Yecovacs,	Pole,	Scraper,	34	....	Pancoast,	Jefferson,	Body severely bruised by fall of coal.
	21	Theodore Rinewalski,	Pole,	Gripman,	35	M.	Jones No. 1,	Tioga,	Leg fractured; run over by cars.
	26	William Cherry,	Scotch,	Miner,	61	M.	Coal Glen,	Jefferson,	Leg crushed by fall of slate; necessitating amputation.
Dec.	11	Robt. Brown,	Irish,	Miner,	65	M.	Cataract,	Clearfield,	Shoulder dislocated by fall of coal.
	21	Woolfgang Bauer,	German,	Driver,	23	S.	Elk No. 31,	Elk,	Leg fractured by cars.

Fifth Bituminous District.

FAYETTE COUNTY.

Uniontown, March 17, 1902.

Hon. James W. Latta, Secretary of Internal Affairs, Harrisburg, Pa.:

Dear Sir: I have the honor to submit, herewith, my first annual report as Inspector of Mines for the Fifth Bituminous District for year ending December 31, 1901.

I take pleasure in stating that with but few exceptions I have received very courteous treatment, and the co-operation of both operators and mine officials, in the discharge of my duties during the year, for which I desire to publicly extend my thanks.

I have made an effort to visit and inspect, as often as my time would permit, all the mines in my district.

When I have had occasion to call attention to defects in ventilation or other irregularities about the mines which required attention, I am pleased to state that there has been a disposition on the part of the officials to remedy them within a reasonable time, so that in no case have I been compelled to invoke the law, although I have been compelled to in three cases, due to misdemeanors committed through carelessness.

There are a number of new mines in a new field of this district known as the Klondyke, which are being very rapidly developed into large ones, which in my opinion have equipment, both inside and outside, equal to the best in either the new or old world.

The sanitary conditions in all the mines in the district, with but few exceptions are good.

The report contains the usual statistical tables; I very much regret that the total number of fatal accidents during the year in and about the mines was forty-one, and there were forty-five serious, non-fatal accidents, making a total of eighty-six accidents, leaving twenty-three wives widows and fifty-three children orphans to mourn the loss of husband and father.

In another part of this report will be found a brief description of these accidents from personal investigation.

The quantity of coal produced per life lost was 175,707 tons. The total quantity of coal produced in this district for the year 1901, was 7,204,023 tons, which was a decrease of 2,756,250 tons from that of

1900, which was due to adding two new districts, necessitating the old ones being redistricted, thereby cutting off several very large producing mines and a number of smaller ones.

The average number of days worked was 238; the number of kegs of powder used was 17,531; the number of pounds of dynamite 429,853.

The report also contains a report of the examination, with the names of the members of the board, giving the names of the successful applicants for the positions of mine foreman and fire boss; all of which is respectfully submitted.

ISAAC G. ROBY,
Inspector of Fifth Bituminous District.

Summary of Statistics 1901.

Number of mines in the district,	66
Number of mines in operation 1901,	65
Number of tons of coal produced,	7,204,023
Number of tons shipped,	2,118,054
Number of tons used for steam at mines,	166,038
Number of tons sold to employes and others,	60,346
Number of tons mined by pick,	5,600,553
Number of tons mined by machine,	1,603,470
Number of tons used in the production of coke,	4,859,585
Number of coke ovens,	8,593
Number of tons of coke produced,	3,300,546
Number of persons employed inside the mines,	6,819
Number of persons employed outside the mines,	4,183
Number of fatal accidents,	41
Number of tone produced per fatal accident,	175,707.8
Number of non-fatal accidents,	45
Number of tons produced per non-fatal accident,	160,089.4
Number of wives made widows by accidents,	23
Number of children orphaned by accidents,	53
Number of kegs of powder used,	17,531
Number of pounds of dynamite used,	429,853
Number of cylindrical boilers in use,	48
Number of tubular boilers in use,	176
Number of steam locomotives in use,	21
Number of electric locomotives in use,	3
Number of old mines abandoned,	2

TABLE A—Classification of Accidents.

	Fatal.	Non-fatal.	Total.
By fall of slate	12	16	28
By fall of coal,	2	3	5
By being caught between car and rib,	4	2	6
By falls of coal and slate,	2	5	7
By an explosion of fire-damp,	7	1	8
By falling down shaft,	1	....	1
By descending cage,	....	5	5
By being caught between car and post,	1	....	1
By premature blast,	2	3	5
By mine fan,	....	1	1
By part of tipple falling down,	....	1	1
By falling from ladder,	....	1	1
By timber on mine car,	....	1	1
By being kicked by a mule,	1	1	2
By mine car and door,	....	1	1
By mine cars,	4	3	7
By removing post,	2	2	4
By dilly trip knocking out timber,	2	....	2
Total,	41	45	86

TABLE B—Occupations of Persons Killed or Injured.

	Fatal.	Non-fatal.	Total.
Miners,	22	28	50
Drivers,	10	8	18
Mining engineers,	3	1	4
Roadman,	1	1	2
Dumper,	....	1	1
Fire boss,	....	1	1
Cager,	....	1	1
Coal loader,	....	2	2
Hitcher,	....	1	1
Boss driver,	1	....	1
Rope rider,	1	....	1
Machinist,	....	1	1
Machine runner,	....	1	1
Laborer,	1	....	1
Assistant mine foreman,	1	....	1
Total,	41	45	86

TABLE C—Nationalities of Persons Kliled and Injured.

	Fatal.	Non-fatal.	Total.
American,	17	19	36
Slav,	14	9	23
Austrian,	4	4	8
Italian,	2	3	5
Irish,	2	3	5
English,	2	1	3
Pole,	....	4	4
Hungarian,	....	1	1
Fins,	....	1	1
Total,	41	45	86

TABLE E—Names of Operators, Showing the Number of Tons Produced, With the Fatal and Non-Fatal Accidents.

	Number of persons employed.	Number of tons of coal produced.	Number of fatal accidents.	Number of tons produced per life lost.	Total number of accidents.	Number of tons produced per accident.
H. C. Frick Coke Co.,	2,719	2,108,813	11	191,710	21	100,419.7
M. R. C. C. & Coke Co.,	1,486	1,470,600	6	245,100	11	133,690.2
Continental Coke Co.,	753	405,508	1	405,508	4	101,377
South West Connellsville Coke Co.,	1,138	672,372	1	672,372	5	134,474.4
American Coke Co.,	842	242,383	7	34,626.1	14	17,313+
Oliver & Snider Steel Co.,	776	698,670	2	349,335	5	139,734
W. J. Rainey,	839	268,320	3	89,440	5	53,664
Pittsburg Coal Co.,	275	178,988	5	35,797.6	7	25,569.7
People's Coal Co.,	209	105,340	......	....	......	....
Lake Erie Gas and Coke Co.,	115	86,750	......	....	2	43,375
Hero Coal and Coke Co.,	59	39,800	......	....	......	....
Lafayette Coal and Coke Co.,	107	17,665	......	....	......	....
A. L. Keister & Co.,	153	85,809	2	42,904.5	3	28,603
Colonial Coke Co.,	95	86,647	2	43,323.5	2	43,323.5
Bute Run Coal and Coke Co.,	24	13,000	......	....	......	....
Isaac Taylor & Co.,	74	72,092	......	....	......	....
E. A. Humphries & Co.,	64	41,400	......	....	......	....
Percy Mining Co.,	55	26,719	......	....	......	....
Stewart Iron Co., Ltd.,	158	97,102	......	....	2	48,551
Atlas Coke Co.,	100	81,816	......	....	2	40,908
John Snider,	9	6,893	......	....	......	....
Fayette Coke Co.,	130	67,275	......	....	......	....
Puritan Coke Co.,	42	7,583	......	....	......	....
Riverview Coal and Coke Co.,	48	36,000	......	....	......	....
Bessemer Coke Co.,	351	112,158	......	....	1	112,158
Acme Coke Co.,	58	27,080	1	27,080	1	27,080
Uniontown Coke Co.,	26	15,120	......	....	......	....
Penn Gas Coal and Coke Co.,	9	7,596	......	....	......	....
Joseph Wharton,	80	64,151	......	....	......	....
S. H. Sackett Coke Co.,	37	11,800	......	....	......	....
Connellsville Coke Co.,	90	13,674	......	....	1	13,674
Ada Coal and Coke Co.,	24	7,697	......	....	......	....
Cheat Haven Coal Co.,	57	27,202	......	....	......	....

TABLE F—Giving names of mines, kind of opening, method of ventilation, system of haulage, pick or machine, names and number of machines in use at each mine, power used in operating machines, name of seam, thickness of seam in inches.

Name of mine.	Kind of opening.	Method of ventilation.	System of haulage.	Pick or machine.	Number in Use.					Motive power.	Name of seam.	Thickness of seam in inches.
					Sullivan.	Jeffries.	Ingersoll.	Harrison.	Morgan-Gardner.			
Leisenring No. 2 mine,	Shaft,	Fan,	Animal and rope,	Pick,							Pittsburg,	92
Youngstown mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	89
Lemont No. 1 mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	88
Lemont No. 2 mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	90
Lemont No. 3 mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	88
Leith mine,	Shaft,	Fan,	Animal and rope,	Pick,							Pittsburg,	89
Brownfield No. 1 mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	86
Brownfield No. 2 mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	86
Oliphant mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	84
Wynn mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	84
Kyle mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	86
Continental No. 1 mine,	Shaft,	Fan,	Animals,	Pick,							Pittsburg,	84
Continental No. 2 mine,	Shaft,	Fan,	Animals,	Pick and machine,			3	1		Com. air,	Pittsburg,	84
Continental No. 3 mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	80
Continental No. 4 mine,	Drift,	Fan,	Animal and rope,	Pick,							Pittsburg,	82
Leckrone No. 1 mine,	Drift,	Fan,	Animals,	Pick and machine,		3			2	Electricity,	Pittsburg,	94
Leckrone No. 2 mine,	Drift,	Fan,	Animals,	Pick,							Pittsburg,	90
Edenborn mine,	Shaft,	Fan,	Animals,	Pick and machine,	3	6		1		Com. air,	Pittsburg,	84
Mt. Braddock mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	84
Florence mine,	Drift,	Natural,	Animal,	Pick,							Pittsburg,	84
Mt. Hope mine,	Drift,	Natural,	Animal,	Pick,							Pittsburg,	92
Smock mine,	Drift,	Fan,	Animal and rope,	Pick,							Pittsburg,	84
Hero mine,	Drift,	Furnace,	Animal,	Pick,							Pittsburg,	84
Colonial mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	84
Eleanor mine,	Drift,	Fan,	Animal and rope,	Pick,							Pittsburg,	84
Grindstone mine,	Shaft,	Fan,	Animal,	Pick and machine,		4				Electricity,	Pittsburg,	82
Sumner mine,	Shaft,	Fan,	Animal,	Pick and machine,					4	Electricity,	Pittsburg,	80
Hanna mine,	Drift,	Furnace,	Animal,	Pick,							Pittsburg,	78
Washington mine,	Drift,	Fan,	Animal and rope,	Pick and machine,					6	Electricity,	Pittsburg,	78
Alice mine,	Drift,	Fan,	Animal and rope,	Pick and machine,		6				Electricity,	Pittsburg,	76
Little Alps mine,	Drift,	Furnace,	Animal,	Pick and machine,		6					Pittsburg,	76

TABLE F ventilation, etc., etc.,—Continued.

Name of Mine.	ıg.	Method of Ventilation.	System of haulage.	Pick or machine.	Number in Use.					Motive power.	Name of seam.	Thickness of seam in inches.
					Sullivan.	Jeffries.	Ingersoll.	Harrison.	Morgan-Gardner.			
Snow Hill mine,	Drift,	Fan,	Animal and rope,	Pick and machine,			6			Electricity,	Pittsburg,	78
Anchor mine,	Drift,	Fan,	Animal and rope,	Pick,							Pittsburg,	82
Stony Hill mine,	Drift,	Fan,	Animal and rope,	Pick,							Pittsburg,	82
Chamonni mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	84
Climax mine,	Slope,	Natural,	Animal and rope,	Pick,							Pittsburg,	84
Albany mine,	Slope,	Fan,	Animal & electric motor.	Pick and machine,					6	Electricity,	Pittsburg,	84
Pike mine,	Drift,	Fan,	Animal & electric motor.	Pick and machine,					6	Electricity,	Pittsburg,	84
Crowthers mine,	Drift,	Furnace,	Animal & electric motor.	Pick and machine,					6	Electricity,	Pittsburg,	74
Buffington mine,	Shaft,	Fan,	Animals,	Pick and machine,		*1				Com. air,	Pittsburg,	82
Lambert mine,	Shaft,	Fan,	Animals,	Pick,							Pittsburg,	78
Gates mine,	2 shafts,	2 fans,	Animals,	Pick and machine,		*6				Com. air,	Pittsburg,	76
Donald mine,	Drift,	Natural,	Animal and rope,	Pick,							Pittsburg,	88
Griffin mine,	Drift,	Furnace,	Animals,	Pick,							Pittsburg,	86
Footdale mine,	2 drifts & slopes.	Fan,	Animals,	Pick and machine,		*3			1	Electricity,	Pittsburg,	88
Parshall mine,	Drift,	Natural,	Animals,	Pick,							Pittsburg,	86
Shamrock mine,	Slope,	Fan,	Animal and rope,	Pick and machine,		*3			*1	Electricity,	Pittsburg,	86
Acme mine,	Drift,	Natural,	Animal,	Pick,							Pittsburg,	66
Smithfield mine,	Drift,	Natural,	Animal,	Pick,							Pittsburg,	72
Penn mine,	Drift,	Natural,	Animal,	Pick,							Pittsburg,	70
Boone mine,	Drift,	Natural,	Animal,	Pick,							Pittsburg,	68
Sackitt mine,	Drift,	Natural,	Animal,	Pick,							Pittsburg,	64
Connellsville No. 1 mine,	Drift,	Fan,	Animal & locomotive,	Pick,							Pittsburg,	68
Ada mine,	Drift,	Furnace,	Animals,	Pick,							Pittsburg,	64
Eagle mine,	Drift,	Furnace,	Animals,	Pick,							Pittsburg,	68
Crossland mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	84
Stewart mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	84

Snider mine,	Drift,	Natural,		Pick,							Pittsburg,	80
Revere No. 1 mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	78
Revere No. 2 mine,	Drift,	Furnace,		Pick,							Pittsburg,	78
Oliver No. 1 mine,	Shaft,	2 fans,	Animal and rope,	Pick,							Pittsburg,	92
Oliver No. 2 mine,	Shaft,	Fan,	Animal and rope,	Pick,							Pittsburg,	92
Percy mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	90
Lincoln mine,	Slope,	Fan,	Animal and rope,	Pick and machine,		2				Com. air,	Pittsburg,	90
Lafayette mine,	Drift,	Natural,	Animals,	Pick,							Pittsburg,	90
Chester mine,	Slope,	Fan,	Animal and rope,	Pick,							Pittsburg,	86

TABLE G—Giving number and size of fans and furnaces, cubic feet of air per minute in circulation, number of persons employed, number of splits, number of cubic feet in each split, number of cubic feet of air in circulation in each mine per person employed.

Names of Collieries.	Names of Operators.	Kind of opening.	Method of ventilation.	Type of fan.	Capacity of quantity circulated.	Number of revolutions.	Size of ventilator.	Number of splits.
Leckrone No. 1 mine,	South West Connellsville Coke Co.,	Drift,	Fan,	Capell,	120,000	70	13½x7	3
Leckrone No. 2 mine,	South West Connellsville Coke Co.,	Drift,	Fan,	Capell,	90,000	200	8x3½	2
Footdale mine,	South West Connellsville Coke Co.,	D. & S.,	Fan,	Capell,	144,000	90	13½x7	6
Bullington mine,	South West Connellsville Coke Co.,	Shaft,	Fan,	Capell,	85,000	80	16x8	2
Lambert,	American Coke Co.,	Shaft,	Fan,	Guibal,	85,000	60	25x8	2
Edinborn mine,	American Coke Co.,	Shaft,	Fan,	Guibal,	130,000	60	25x8	3
Gates mine,	American Coke Co.,	Shaft,	2 fans,	Capell,	60,000	130	12x5	2
Leisenring No. 1 mine,	H. C. Frick Coke Co.,	Shaft,	Fan,	Capell,	249,000	75	25x8	5
Youngstown mine,	H. C. Frick Coke Co.,	Slope,	Fan,	Guibal,	140,000	65	20x8	2
Lemont No. 1 mine,	H. C. Frick Coke Co.,	Slope,	Fan,	Capell,	120,400	70	16x8	4
Lemont No. 2 mine,	H. C. Frick Coke Co.,	Slope,	Fan,	Guibal,	120,000	70	20x8	6
Lemont No. 3 mine,*	H. C. Frick Coke Co.,	Slope,	Fan,	Capell,	35,000			1
Leith mine,	H. C. Frick Coke Co.,	Shaft,	Fan,	Capell,	212,000	75	16x8	5
Brownfield No. 1 mine,	H. C. Frick Coke Co.,	Slope,	Fan,	Guibal,	120,000	70	25x6	3
Brownfield No. 2 mine,*	H. C. Frick Coke Co.,	Slope,	Fan,	Guibal,	120,000			3
Oliphant mine,	H. C. Frick Coke Co.,	Slope,	Fan,	Guibal,	80,000	70	16x6	2
Wynn mine,	H. C. Frick Coke Co.,	Slope,	Fan,	Brazil,	36,000	50	12x6	2
Kyle mine,	H. C. Frick Coke Co.,	Drift,	Fan,	Brazil,	98,000	70	12x6	3
Stewart mine,	Stewart Iron Co., Ltd.,	Slope,	Fan,	Guibal,	78,000	60	20x8	3
Crossland mine,	Atlas Coke Co.,	Slope,	Fan,	Guibal,	80,000	60	20x6	3
Percy mine,	Percy Mining Co.,	Slope,	Fan,	Guibal,	48,000	50	12x4	2
Mt. Braddock mine,	W. J. Rainey,	Slope,	Fan,	Guibal,		65	20x6	3
Revere No. 1 mine,†	W. J. Rainey,	Slope,	Fan,	Capell,			16x8	1
Revere No. 2 mine,	W. J. Rainey,	Drift,	Furnace,		27,500		6x4x16	2
Snider mine,	John Snider,	Drift,	Natural,		5,740			1
Shamrock mine,	Fayette Coke Co.,	Slope,	Fan,	Capell,	44,850	80	9x5½	2
Puritan mine,	Puritan Coke Co.,	Drift,	Natural,		14,200			1
Griffin mine,	Bessemer Coke Co.,	Drift,	Furnace,		50,000		6x4x25 7x6x25	2
Riverview mine,	Riverview Coal and Coke Co.,	Drift,	Furnace,		12,600		5x4x12	1
Acme mine,	Acme Coke Co.,	Drift,	Natural,		17,500			1
Smithfield mine,	Uniontown Coke Co.,	Drift,	Natural,		10,500			1

Penn mine,	Uniontown Gas Coal Co.,	Drift,	Natural,		6,000			1
Sackett mine,	Sackett Coal and Coke Co.,	Drift,	Natural,		3,200			1
Bourne mine,	Joseph Wharton,	Drift,	Furnace,		32,600		6x4x23	2
Connellsville No. 1 mine,	Connellsville Coke Co.,	Drift,	Fan,	Brazill,	30,000	60	16x6	1
Ada mine,	Ada Coal and Coke Co.,	Drift,	Furnace,		15,600		5x3½x16	1
Eagle mine,	Cheat Haven Coal and Coke Co.,	Drift,	Furnace,		18,000		6x4x16	2
Oliver No. 1 mine,	Oliver and Snider and Steel Co.,	Shaft,	2 fans,	Brazill, Guibal,	223,200	75	12x4 20x6	3
Oliver No. 2 mine,	Oliver and Snider and Steel Co.,	Shaft,	Fan,	Guibal,	223,200	75	20x6	3
Lincoln mine,	A. L. Keister & Co.,	Slope,	Fan,	Guibal,	80,600	40	20x7½	3
Lafayette mine,	Lafayette Coal Co.,	Drift,	Natural,		21,600			2
Smock mine,	Pittsburg Coal Co.,	Drift,	Fan,	Brazil,	45,000	330	6 2-3x3½	2
Hero mine,	Uniontown Coal Co.,	Drift,	Furnace,		15,000		6x4x14	1
Colonial mine,	Colonial Coal and Coke Co.,	Drift,	Fan,	Brazil,	18,700	40	10x3	2
Eleanor mine,	Pittsburg Coal Co.,	Slope,	Fan,	Brazil,	30,000	50	12x4 1-3	2
Grindstone mine,	Pittsburg Coal Co.,	Shaft,	Fan,	Guibal,	160,000	75	18x6	3
Sumner mine,	Lake Erie Gas Coal and Coke Co.,	Shaft,	Fan,	Guibal,	80,000	42	20x7	3
Pike mine,	People's Coal Co.,	Drift,	Fan,	Robenson,	78,000	40	20x6	2
Albany mine,	M. R. C. Coal and Coke Co.,	Drift,	Fan,	Capell,	50,000	60	11x5	2
Climax mine,	M. R. C. Coal and Coke Co.,	Slope,	Natural,		16,000			1
Chamouni mine,	M. R. C. Coal and Coke Co.,	Slope,	Fan,	Guibal,	60,000	60	20x7	2
Stony Hill mine,‡	M. R. C. Coal and Coke Co.,	Slope,	Fan,	Brazil,	16,800			1
Anchor mine,	M. R. C. Coal and Coke Co.,	Drift,	Fan,	Brazil,	28,000	70	14x3	2
Snow Hill mine,	M. R. C. Coal and Coke Co.,	Drift,	Fan,	Pollock,	45,000	60	20x7	3
Little Alps mine,	M. R. C. Coal and Coke Co.,	Drift,	Furnace,		28,000		5½x3½x12	1
Washington mine,	M. R. C. Coal and Coke Co.,	Drift,	Fan,	Pollock,	47,600	55	16x6	2
Alice mine,	M. R. C. Coal and Coke Co.,	Drift,	Fan,	Pollock,	60,000	45	28x8	3
Hanna mine,	Pittsburg Coal Co.,	Drift,	Furnace,		10,000		5x4x12	2
Crowthers mine,	M. R. C. Coal and Coke Co.,	Drift,	Furnace,		25,060		5½x3¾x15	2
Continental No. 1 mine,	Continental Coke Co.,	Shaft,	Fan,	Capell,	65,000	32	16x8	2
Continental No. 2 mine,	Continental Coke Co.,	Shaft,	Fan,	Capell,	119,000	55	16x8	3
Continental No. 3 mine,	Continental Coke Co.,	Slope,	Fan,	Guibal,	57,600	38	16x6	2
Continental No. 4 mine,	Continental Coke Co.,	Drift,	Fan,	Guibal,	58,000	70	12x5	3
Chester mine,	A. E. Humphries,	Slope,	Fan,	Guibal,	25,000	45	16x6	2
Florence mine,	Bute Run Coal and Coke Co.,	Drift,	Natural,		12,800			1
Mt. Hope mine,	Isaac Taylor and Co.,	Drift,	Natural,		38,400			3

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*Ventilated from No. 1.
†Just put in operation.
‡Ventilated from Anchor mine.

TABLE G—Continued.

Names of Collieries.	Names of Operators.	Number of Cubic Feet of Air Circulating in Each Split. First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Number of cubic feet in circulation per each person employed.
Leckrone No. 1 mine,	South West Connellsville Coke Co.,	44,600	39,500	42,860				1,000
Leckrone No. 2 mine,	South West Connellsville Coke Co.,	54,000	13,600					1,125
Footdale mine,	South West Connellsville Coke Co.,	9,760	12,000	18,000	27,000	12,600	9,100	508
Buffington mine,	South West Connellsville Coke Co.,	19,200	21,280					708
Lambert mine,	American Coke Co.,	33,600	9,000					1,300
Edinborn mine,	American Coke Co.,	36,400	25,200	18,900				840
Gates mine,	American Coke Co.,	28,800	43,200					1,300
Leisenring No. 1 mine,	H. C. Frick Coke Co.,	30,000	12,000	35,000	36,720	39,200		800
Youngstown mine,	H. C. Frick Coke Co.,	93,000	50,400					1,170
Lemont No. 1 mine,	H. C. Frick Coke Co.,	18,500	20,000	16,800	13,500			1,111
Lemont No. 2 mine,	H. C. Frick Coke Co.,	8,100	14 500	14,720	18,350	35,000	21,000	695
Lemont No. 3 mine,	H. C. Frick Coke Co.,	50,400						1,200
Leith mine,	H. C. Frick Coke Co.,	40,000	12,000	20,000	12,500	15,600		1,200
Brownfield No. 1 mine,	H. C. Frick Coke Co.,	57,500	61,600	19,800				540
Brownfield No. 2 mine,	H. C. Frick Coke Co.,	27,000	28,050	38,250				540
Oliphant mine,	H. C. Frick Coke Co.,	52,250	24,000					534
Wynn mine,	H. C. Frick Coke Co.,	16,800	21,500					514
Kyle mine,	H. C. Frick Coke Co.,	16,200	16,800	17,400				620
Stewart mine,	Stewart Iron Co., Ltd.,	24,000	9,000	8,960				1,060
Crossland mine,	Atlas Coke Co.,	28,000	15,900	23,110				1,600
Percy mine,	Percy Mining Co.,	15,300	7,620					1,900
Mt. Braddock mine,	W. J. Rainey,	32,400	9,600	16,000				361
Revere No. 1 mine,	W. J. Rainey,	13,200	10,400					242
Revere No. 2 mine,	W. J. Rainey,	13,800	11,520					380
Snider mine,	John Snider,	5,740						195
Shamrock mine,	Fayette Coke Co.,	19,600	21,400					690
Puritan mine,	Puritan Coke Co.,	14,200						320
Griffin mine,	Bessemer Coke Co.,	13,800	12,320					423
Riverview mine,	Riverview Coal and Coke Co.,	11,200						268
Acme mine,	Acme Coke Co.,	15,600						434
Smithfield mine,	Uniontown Coke Co.,	10,500						527
Penn mine,	Uniontown Gas Coal Co.,	6,000						248
Sackett mine,	Sackett Coal and Coke Co.,	3,200						165
Bourne mine,	Joseph Wharton,	15,000	14,000					362

Connellsville No. 1 mine,	Connellsville Coke Co.,	28,600						335
Ada mine,	Ada Coal and Coke Co.,	15,600						1,015
Eagle mine,	Cheat Haven Coal and Coke Co.,	7,640	9,260					450
Oliver No. 1 mine,	Oliver and Snider and Steel Co.,	32,400	26,320	36,000				506
Oliver No. 2 mine,	Oliver and Snider and Steel Co.,	63,000	10,800	18,000				506
Lincoln mine,	A. L. Keister & Co.,	14,000	19,600	21,500				1,040
Lafayette mine,	Lafayette Coal Co.,	16,840	4,000					480
Smock mine,	Pittsburg Coal Co.,	28,000	14,960					1,030
Hero mine,	Uniontown Coal Co.,	14,800						600
Colonial mine,	Colonial Coal and Coke Co.,	14,200	4,500					400
Eleanor mine,	Pittsburg Coal Co.,	27,300	14,700					660
Grindstone mine,	Pittsburg Coal Co.,	20,000	32,000	24,000				2,100
Sumner mine,	Lake Erie Gas Coal and Coke Co.,	32,000	6,400	25,200				1,760
Pike mine,	People's Coal Co.,	36,260	26,500					700
Albany mine,	M. R. C. Coal and Coke Co.,	19,500	18,000					250
Climax mine,	M. R. C. Coal and Coke Co.,	13,200						360
Chamouni mine,	M. R. C. Coal and Coke Co.,	26,420	32,800					380
Stony Hill mine,	M. R. C. Coal and Coke Co.,	16,800						102
Anchor mine,	M. R. C. Coal and Coke Co.,	10,880	9,600					292
Snow Hill mine,	M. R. C. Coal and Coke Co.,	12,600	10,800	15,200				203
Little Alps mine,	M. R. C. Coal and Coke Co.,	28,000						950
Washington mine,	M. R. C. Coal and Coke Co.,	29,120	11,780					1,000
Alice mine,	M. R. C. Coal and Coke Co.,	10,080	33,390	13,460				183
Hanna mine,	Pittsburg Coal Co.,	9,600	9,800					360
Crowthers mine,	M. R. C. Coal and Coke Co.,	8,460	11,200					262
Continental No. 1 mine,	Continental Coke Co.,	28,000	37,200					650
Continental No. 2 mine,	Continental Coke Co.,	31,500	30,000	33,600				790
Continental No. 3 mine,	Continental Coke Co.,	24,000	33,600					1,150
Continental No. 4 mine,	Continental Coke Co.,	20,000	28 000	10,000				773
Chester mine,	A. E. Humphries,	7,350	10,800					420
Florence mine,	Bute Run Coal and Coke Co.,	12,880						853
Mt. Hope mine,	Isaac Taylor and Co.,	6,000	9,000	12,000				925

Gob or Mine Fires.

About 4 o'clock Thursday, December 5, 1901, in company with B. F. Jones, division superintendent of H. C. Frick Coke Company, and C. M. Shank, superintendent, Lemont mines, Lemont Furnace, I discovered smoke on an old gob in North slope No. 3 room, No. 1 butt of No. 4 right or H flat. The presence of this smoke indicated a smouldering gob fire, which must necessarily have been of spontaneous origin. This part of the mine had not been in active operation since 1897, but on account of the gob being very much heated and the peculiar smell due to a combination of the gasses being given off by it, that there had been a suspicion for more than a year that it might be on fire. The management being cognizant of the danger that follows a mine fire, naturally felt very uneasy, therefore to guard or watch the indications closely, thermometers were hung at different points and a close watch was kept on the place by inspections being made every other day and a reading of the thermometer taken and a record made of same. One of the peculiar features was that the temperature continued to lower as indicated by the thermometer, while the odor of gas apparently increased, and while it would naturally be supposed from the lowering of the temperature, as was indicated by the thermometer, that the danger from fire was becoming more remote, as even the water that passed through the old gob was gradually approaching its normal temperature, yet even against these indications, the peculiar oder of the gasses continued gradually to increase.

The reading of the thermometer on the date of the discovery of the smoke was only 54 degrees F. The fact that the district in the immediate vicinity of where the smoke was discovered was giving off marsh gas in considerable quantities, with also a body of firedamp standing near, caused great anxiety. Steps were immediately taken to build stoppings and seal off the entire connected section; first with temporary stoppings which formed part of the permanent stoppings, followed immediately by concrete and brick. The work on the stoppings were rapidly prosecuted until its completion, although on one of my visits, after their completion, I found that gas was slowly issuing through several of these stoppings, to such an extent that it would indicate its presence on a safety lamp, and as often such as conditions arose the masons would go over the stoppings carefully and plaster them with another coat of cement.

In order to shut off and entirely seal up the affected section, it was necessary to build three stoppings on No. 4 right flat, three on No. 5 right flat, and five on No. 6 right flat. The stoppings on No. 6 flat are on Butts Nos. 1 and 2. And it might be well to state here, that the erection of the stoppings in the lower flats necessitated some provision being made for the purpose of relieving the head or pressure of water, that would naturally come against them. This was done by building, in each of the stoppings where the conditions demanded, a water trap of wooden pipe, adjusted in such a way that it would relieve the head of water without admitting any air into the affected district, which was being watched in every detail as closely as possible.

On the evening of July 23, a fire originated in the Edenborn mines, the result of a blown out shot. It started in the first sump butt heading, now known as stable heading, which begins at station 1+30 of the first right flat. The face of the heading at this time was about 330 feet in from the flat, and the grade was dipping about two per cent. A cut-through thirty feet back from face, had been started and was in about twenty feet. A line of brattice built of boards extended a few feet past this cut-through, which was very dry. The fire boss had examined the heading at 6.30 P. M., when it was about ready for a blast, and had not detected any gas. One-half hour later the shot was fired, which ignited the coal dust, and the gas which the shot had liberated. The men who were working in the heading at the time started to find the fire boss, and it was some twenty minutes before he reached the scene of the fire.

During this time the fire had extended back fifty feet from the face and had caught the brattice. The fire boss ordered all the men out of the mines, and at 7.30 all were out.

The superintendent and pit boss were notified and arrangements were at once made to reenter the mines by No. 2 shaft. The pit boss, fire boss and two other men went down at 8 o'clock, worked around No. 1 shaft and opened the door on the lower side of Parallel butt, forcing the smoke around the empty track to back of No. 1 shaft.

Mules which had been left in No. 1 were then taken out, and preparations were made to flood the stable heading. Water was turned on at 12 o'clock. By this time the smoke and heat were so intense that no work could be done in the stable heading. The fire extended back 250 feet.

It became necessary to build three brattices, which were completed on the night of the 24th. They were constructed of plank and clay filling. Nos. 1 and 2 were completed first, allowing the smoke and gas to escape by No. 3, when that was afterwards closed tight. The heat and smoke retarded the work, but under the guidance of the pit boss the men stuck faithfully to their work and were at last successful.

Thursday the heading was flooded, and an examination made on Friday afternoon showed that the fire was extinguished and no accident occurred. The mine was opened up, ventilation established, and after the loose top was taken down and the part of the mine that the heat from the fire had damaged had been made safe, work was resumed as usual.

Accidents by Fire-damp Explosions.

As will be observed by glancing over the tables, there were seven fatal and one non-fatal accident in this district in 1901, by explosions of fire-damp.

Three of the number occurred from the careless use of open lights and negligence of the management in charge at the mines, as the engineers were allowed to pass into the mines for the purpose of making a survey without the mine first having been examined by the fire boss and reported safe.

Three of the fatal accidents occurred at the Grindstone mines, Pittsburg Coal Company, December 3, 1901, at 3.30 P. M., when a party of four engineers passed into the mines, for the purpose of making a survey. They were instructed by the mine foreman not to pass through the last cut-through with their open lights, and this appeared to have been a standing order at the mine, although it evolves considerable fire-damp and is worked with open lights. Two of the surveying party carried closed lights, and two open ones and in passing into the face of No. 7 butt entry, one of the party who carried the open light ignited the gas 178 feet from the face of the heading and about forty feet back of the last cut-through.

Two of the party that carried the closed lamps had passed on and were near the face of the heading when the explosion occurred.

Two of the victims died on the 9th, and one on the 18th of December.

There was no evidence of any great violence at the seat of the explosion, but there was that coal dust had added very materially to its intensity.

So long as the use of open lamps is permitted in mines that evolve fire-damp, similar occurrences may be expected.

On March 25, 1901, 9 A. M., an explosion occurred in the Gates shaft mine, due to a blown out shot near the face of the right parallel air course or where the right parallel air course crosses the main heading about 800 feet from the bottom of No. 1 shaft.

As a result of this explosion, Gibson Gilmore, George Pedesco, James Wilson and James Murphy lost their lives.

The operator had furnished and equipped the mine with everything necessary to operate it safely, but through lack of discipline and good management in the mine, by circulating the air around the face of the workings to such an extent as to dilute and render harmless the noxious gases, gas was allowed to accumulate in dangerous quantities, and as a result this very sad accident occurred. Below will be found the verdict at which the jury arrived after a very exhaustive investigation of nearly five days.

"James Wilson, George Pedesco, James Murphy and Gibson Gilmore came to their death March 26, 1901, from burns inflicted upon their persons by an explosion of gas in the Gates mine of the American Coke Company situated in German township, Fayette county, Pa., on March 25, 1901, caused by a blown out shot fired by Mike Goble in said mine when gas was present in dangerous quantities. We also find that said Mike Goble fired the shot that caused the explosion, without authority and contrary to the mining law. We further find that standing gas was present in said mine in dangerous quantities in various working places, in violation of the mining laws, and that the reason that the gas was present was owing to the improper and deficient ventilation of said mine due to failure of the acting mine foreman and fire boss to keep the mine clear of standing gas and to keep workmen from entering when gas was present in dangerous quantities.

FRANK H. TAYLOR,
Coroner.

Alfred H. Hood,	Bernhart Walker,
David Blackburn,	Michael Darr, Sr.
Jas. W. Stouffer,	Thomas M. Fee.

There appears to be a prevailing opinion among some mining men, that they can operate a mine that evolves fire-damp, successfully and without risk, by the use of open lamps, but it appears to me, that men who imagine themselves capable of doing what other men have failed to do, assume too much to be successful and prudent mine managers, and in my oponion, so long as the use of open lamps is permitted or tolerated in mines, that evolve marsh gas, just so long may we expect to be startled by the sad report that another explosion has occurred, and lives have been foolishly sacrificed.

The following is the coroners jury's verdict, at the inquest which was held December 13, 1901, at Brownsville over the body of Charles Zimmerman, one of the victims of the Grindstone explosion: "That the said Charles Zimmerman came to his death, December 13, 1901, from injuries received in the Grindstone mine of the Pittsburg Coal Company, Jefferson township, Fayette county, by an explosion of gas on December 3, 1901, which was caused by an open light in the cap of William C. Heath, coming in contact with standing gas in entry No. 7, 178 feet from the face of the heading, and we find Mine Foreman James N. Eaton guilty of neglect of duty in having permitted deceased to enter the mine, without it first having been properly examined by the fire boss or by himself; also for permitting standing gas in said mine.

We also find that the fire boss, David E. Jones, was guilty of neglect of duty in failing to notify deceased of their danger from gas by reason of poor ventilation in entry No. 7, or in failing to examine the place for them. Also for his failure to place danger signals at entrance to the idle workings, where the explosion occurred.

We censure the management of the Pittsburg Coal Company at the Grindstone mine for failure to employ a competent mine foreman and fire boss, and we recommend that the Mine Inspector of the Fifth Bituminous District proceed legally against the said mine foreman, James N. Eaton and fire boss, David E. Jones. And we further recommend, that the said Mine Inspector of the Fifth Bituminous District use his utmost endeavors to secure an amendment to the mining laws of the State compelling the use of safety lamps only, in all gas producing mines.

Harry Eastman, Rinard R. Bulger,
Lawrence B. Kocle, Jennings C. Bernett,
Danl. H. Pearsall, Jos. G. Smith,
Jurors.

Accidents from Miscellaneous Causes.

As has already been stated in the report, and it is very unpleasant and sad opinion to express, that the greater number of victims of mine accidents, have through their own carelessness and poor judgment contributed to their misfortune. One was killed by falling down a shaft, four were seriously injured by the engineer losing control of his engine while lowering them down the shaft. Two were killed and three injured by blast. One man was injured by being caught in mine fan. He was oiling the bearings of a Capell fan, and it being a force fan, formed a partial vacuum at the eye of the fan, and by standing too close his clothes were sucked into the fan, and the scoop of the blade catching them, drew him in and badly crushed him. Two were seriously injured by part of the tipple falling on them; one was seriously injured by falling from a ladder; anothers jaw was badly fractured by being kicked by a horse while taking him outside; another was caught in machinery, etc. The number of accidents can be reduced only by the victims exercising better care for their own safety.

Accidents from Falls of Roof and Coal.

Sixteen fatal and twenty-four serious, non-fatal accidents occurred in this district from falls of roof and coal, being 46.5 per cent. of the whole number of accidents. This appears to be one of the most prolific causes of accidents.

The records also show that the greater number of these occur to victims who show an utter disregard of the dangers, and fail to heed the advice and warnings of those who are trying to protect them. After fully considering the stand that is taken by so many of the employes and the large percentage of inexperienced miners, it is a cause for surprise that the number of fatalities is not greater.

After a full investigation of the accidents that have occurred in this district, I find that a few of them might have been averted by a more careful inspection and the enforcement of rigid discipline on the part of the mine management. A number of accidents occur, not from the condition of the mine or the condition that exists in the mine, but rather from the utter disregard for the dangers that surround them and the conduct of the men who are the victims of the accident.

Accidents to Drivers, Runners and Others by Mine Cars.

The number of accidents, caused in various ways by mine cars, was thirteen fatal and eleven non-fatal or 31.7 per cent. and 24.4 per cent. of all the accidents. Drivers furnish by far the greatest number of victims in this class of mine accidents. Some were killed while riding on trips, others were crushed against the rib by mine cars, others were kicked by mules in front of moving cars, still others were caught against door frames, etc. To prevent this class of accidents, it is certainly very clear that experienced miners must be employed for this kind of work, and strict discipline will no doubt reduce the number of accidents.

Description of Mines.

H. C. Frick Coke Company.—There were at the end of this year, nineteen mines in the district under the management of this company; twelve are in the Connellsville basin proper, while the other seven are in the new field known as the New Klondyke field, on the eastern out-crop of the Monongahela River syncline.

Kyle.—This mine has been in very good condition as to safety and healthfulness, on all my visits. The talked of improvements in former reports have not yet been made, owing more to the new acquisitions in the New Klondyke field.

Wynn.—This mine retains about its usual standing. On my visits I have found it in a satisfactory condition.

Oliphant.—During the year this mine has been improved by arching the entrance to the manway with brick, and building an overcast which has improved its condition as to healthfulness. There has also been a portion of the slope laid with heavy iron.

Redstone No. 2.—I found on all my visits to this mine, the conditions as to healthfulness and safety, very satisfactory, excepting that on my last visit the black damp in one part gave some trouble. The drainage was good. There are extensive improvements talked of which will place this mine in front when completed. The plans are at present in the hands of the engineer and will likely be carried out some time during the year.

Redstone No. 1.—This mine was in a satisfactory condition with regards to healthfulness and safety on all my visits, and will be as equally benefitted as No. 2 when the contemplated change is made.

Leith.—The ventilation of this mine has been much improved during the year by the installation of a new Capell fan sixteen feet in diameter and eight feet in width. On one of my visits after the new fan had been installed and the bearings were smooth, the fan passed 403,000 cubic feet of air per minute. The drainage of the mine is in good condition and is carefully looked after.

Leisenring No. 2.—This is an excellent mine, favored with good grades, good top and bottom and with high coal. On my last visit they had a new Capell fan in operation and I measured 249,000 cubic feet at the inlet. The workings of this mine being very extensive, this new and powerful fan was very badly needed. During the coming year there will be some changes of importance made in the extension of mechanical haulage inside. The mine was free from fire-damp during the entire year and its condition as to healthfulness and safety was very satisfactory.

Youngstown.—There is a new slope being driven north of the old slope at this mine for the purpose of developing some new coal. The top along this new slope and the adjacent new workings is very bad and requires very great care on the part of the management. I had occasion on one of my visits to complain of some dangers along the manway but was met with a willingness on the part of the officials to immediately take the matter up and remove the dangers. In all my visits I have found the mine in satisfactory condition.

Lemont No. 3.—This mine was not operated during the entire year. It receives its ventilation from No. 1 and employs only about thirty miners. I have on all my visits found it in a satisfactory condition.

Lemont No. 1.—This mine is well looked after and kept in a healthful condition as to ventilation, drainage and safety.

Lemont No. 2.—I found this mine to be in a safe and healthful condition on all my visits.

Coal Lick Run Branch.

Continental No. 1.—The sanitary condition of this mine was good on all my visits although it has at times produced fire-damp very freely. It was comparatively free from this gas with the exception of one visit and a move was immediately made to remove the same, which was accomplished the following day. This will be an excellent mine. Money has been freely used in construction work, both inside and out.

Continental No. 2.—This mine is also located on the Coal Lick Run branch and is another of the fine and well equipped mines. In some parts of this mine there is trouble from bad tops which have at times produced large volumes of fire-damp. On each of my visits, I found it in a safe and healthful condition.

Continentals Nos. 3 and 4.—The slope mine No. 3 has not yet produced any gas. The same that has been said of the above two mines in regards to construction and general equipment can be said of this mine. It has not yet produced any fire-damp but has very bad top at some points. I have found the mine in a safe and healthful condition on each of my visits to it.

Number 4 is a drift mine, and owing to the construction of the fan, the narrow airway leading from the fan to the mine and the temporary stoppings, there were some parts of it not in a healthful condition with regards to ventilation on my last visit.

Leckrone Mines Nos. 1 and 2.—These two mines are located on the Smithfield branch of the Baltimore and Ohio. Both are drift mines. No. 1 is perhaps one of the finest mines in the world, both inside and out. No. 2 is also an excellent mine, being as well constructed on the outside as No. 1, but not being naturally favored so well inside, both having sprocket chain hoist to raise coal to tipple.

Buffington Shaft.—This is another good mine, which also produces large quantities of gas, and on one of my visits I found considerable standing gas and while there, steps were taken to remove the same. The mine is kept in a healthful condition and its safety is carefully looked after.

Footdale.—At this mine there is one slope and two drifts all connected with one system of ventilation. This mine also has sprocket chain hoist to raise coal to tipple. On all my regular official inspections I have found it in a healthful and safe condition.

Lambert Shaft Mine.—Six hundred and thirty-one feet to top of coal. This is another mine in the new Klondyke field and is one of the most gaseous mines in the western part of the State. There has never at any time been any blasting allowed in the mine, and on my inspections I have found it impossible to work some places more than fifteen or twenty feet in advance of the air current when there has been from 10,000 to 15,000 cubic feet passing. This mine has been exceptionally fortunate, as there have been no accidents of any note since its completion, except on one occasion where W. H. Rosenlief, hoisting engineer, lost control of his engine while lowering ten men into the mine, preparatory to their going to work. Nine of the ten were more or less seriously injured. On my investigation of this accident there were some facts brought out that showed the engineer to have been under the influence of liquor, and I have brought suit against him and he will be arraigned in March, 1902. The mine is very carefully looked after and is kept in a safe and healthful condition.

Edenborn.—This mine produces large quantities of gas, and on one of my visits it was found in considerable quantities. The mine is equipped with a twenty foot Guibal fan and on my last visit was in a healthful and satisfactory condition.

Gates.—This mine is a strong producer of marsh gas and is equipped with two twelve foot Capell fans capable of circulating under favorable circumstances 160,000 cubic feet of air at 130 revolutions each. It has bad top in some parts, but despite this I found it in a very healthful and satisfactory condition on my last visit.

Smithfield.—This mine was in a good condition on all my visits.

Penn.—This is a new mine and on none of my visits had a sufficient number of men working to bring it under the requirements of the law, although the sanitary condition is good.

Bourne.—This mine is fully up to the provisions of the law as to healthfulness, and is being very carefully looked after.

Sackett.—This mine was in a very satisfactory condition as to ventilation and drainage.

Connellsville No. 1.—This mine is in good condition and fully up to the requirements of the law.

Eagle.—The sanitary conditions of this mine was satisfactory on all my visits.

Revere Nos. 1 and 2.—On my last visit both were in a very satisfactory condition as regards ventilation and drainage.

Shamrock.—This is practically a new mine and there are 150 ovens. A new Capell fan has been installed during the year. Mine was in very satisfactory condition on all my visits.

Parshall.—This is a small mine and has thirty-two oven and tipple connections for loading coal. The sanitary condition was good on each visit.

Donald.—This mine is being rapidly developed with a view of making it a large producer. The management has installed two electric chain machines and is building coke ovens, and has also increased their acreage.

Griffin.—The sanitary condition of this mine was very satisfactory on each of my visits. A large furnace was built during the year.

Acme.—This mine was in good condition on my last visit.

Mt. Braddock.—On two of my visits the condition of the mine did not come up to the requirements of the law as regards ventilation, there by rendering the atmosphere of the mine unhealthful. In some parts of the mine, on my last two visits, the ventilation was much improved.

Percy.—This mine was in good condition on each visit, and up to the requirements in every particular.

Stewart.—The sanitary condition of this mine is good. Natural conditions are very much against the management and operation of the mine, in the nature of a bad roof.

Crossland.—This mine is carefully looked after and is fully up to the requirements of the law.

Snider.—This mine was in good condition on my last visit.

Oliver Nos. 1 and 2.—These mines are in every particular up to the requirements of the law. A large number of permanent masonry stoppings have been built and the mine doors have been set in masonry during the year.

Colonial.—This is a new mine, which on each of my visits was in a satisfactory sanitary condition. While the ventilation and drainage are not good, they are an improvement on the old mine.

Hero.—This is a small mine and is ventilated by a furnace. The sanitary condition was satisfactory on my last visit.

Lincoln.—This mine is in good condition, and in all parts the ventilation is ample and well distributed.

Lafayette.—Is a new mine with 111 ovens. The ventilation was not good owing to the fact of their not being any means of artificial ventilation. The drainage and general conditions were satisfactory on my last visit. The mine changed hands lately and the owners contemplate installing a large fan and developing this into a fine plant.

Mt. Hope.—This mine was in good condition as to ventilation on my last visit. On one of my previous visits the current was very sluggish and did not clear the powder smoke, thus rendering the air unhealthful.

Eleanor.—Has been very much improved during the year, having been equipped with a new haulage system which allows them to haul from both openings with one rope. The mine has every indication of being well looked after.

Smock.—The much talked of Capell fan that was to have been installed at Smock has not yet materialized. Preparations were made for it about a year ago by doing some of the masonry work, but there is no more evidence of its completion now than then. I have on all my visits found it in a healthful condition.

Sumner.—During the year there has been a new tipple built about a half mile below the shaft, with a new slope driven, and connections were made to the mine sometime in December. Owing to the greater portion of the coal lying north to the shaft and immediately in front of the new slope, they expect the operations to gradually decrease at the shaft, and increase at the now slope until nearly all the operations will be concentrated at the slope.

Crothers.—This mine was in a fair condition as to ventilation and drainage on my last visit.

Pike.—This is a new mine located in Brownsville and is equipped for a large output. A twenty foot Robinson fan, capable of producing a very large volume of air has been installed. I found the mine in a healthful condition on each of my visits.

Hannah.—In my visits to this mine I have found it in a healthful and satisfactory condition.

Grindstone.—I have on all my inspections found it in a healthful condition. Considerable improvements have been made during the year. A new rock slope has been driven in the northwest part of this property which will be completed early in the spring of 1902 for the purpose of ingress and egress also for ventilation, and for lowering supplies.

Snow Hill.—This mine was not in operation at any of my visits.

Anchor.—This mine was in a healthful condition on my last visit and the management say it will be exhausted by the middle of the coming year.

Stony Hill.—This mine is ventilated by the Anchor mine fan and on all my visits I found the quantity of air passing into the mine equal to the requirements of law, but it was so sluggish near the face of the workings that the sanitary conditions were not satisfactory. My first visit was occasioned by a petition from some of the miners to the Chief of the Bureau of Mines complaining of the unhealthful condition of the mine. Upon receiving notice from the Chief I immediately requested Mr. Henry Louttit, Inspector of the First Bituminous District to meet me in a joint inspection and found the miners justified in their complaint. Immediately after our inspection I notified the mine foreman and the superintendent to comply with the mine laws and have since had two conferences with the mine officials and provisions are rapidly being made to improve the condition of the mine. The management reports that it will be exhausted by the first of June.

Chamouni.—This mine was not in operation from May 18, until December 7, consequently I did not make an official visit and the mine was not in operation when I did visit it.

Climax.—On my last visit the drainage and ventilation were not satisfactory. This mine was exhausted in September of this year.

Albany.—This mine has been in a very satisfactory condition, except that the ventilation is sluggish in some parts.

Washington.—On all my visits to this mine I found the sanitary conditions very satisfactory.

Little Alps.—This mine was in operation only part of the year, consequently I made but one official visit and found ventilation, drainage and other general conditions satisfactory.

Alice.—This is a large mine, and while the quantity of air passing is fully up to the requirements of the law, on all my visits I found the air in some parts was so sluggish that it did not remove the deliterious gases due to powder smoke and open lights, so as to keep the mine in a healthful condition. The drainage was not up to the requirements in some places. The management was making some provisions to improve the sanitary condition, by building a system of masonry stoppings between the intake and the return, and on my last visit had partly completed a slab along the return air course to widen it and reduce the friction of air. This when completed will doubtless improve the sanitary condition of the mine.

Ronco Shaft.—This shaft is located on the Coal Lick Run branch of the Pennsylvania Railroad, and was sunk about fifty feet during the latter part of this year and was taken off the contractors hands January 1, 1902, and will be completed by the company. They expect to strike coal at about 200 feet. The shaft when completed will be eleven by twenty-four feet, with three compartments, two for cage ways and one for air, etc. There were twenty-five blocks of houses under construction at the last of the year and the company expects to erect 250 by-product ovens which will be located at Sharon. The coal will be shipped by rail and coked in by-product ovens at that place.

List of names of successful candidates for mine foremen that have been recommended by the various examining boards for first and second class mine foreman certificates, and also for fire boss certificates, dating back to 1889:

Successful applicants granted certificates in 1889:

I. G. Roby,
I. W. Reckard.
B. S. Ragger,
John Tocum,
Joseph Knapper,
Andrew Beatty,
John Boyle,
Morris Beedle,
Wm. Holsing,
Jobey Hanford.

Successful applicants granted certificates in 1890:

Hugh Ross,
Henry M. Wilson,
Edward Mooney,
James Phillips,
Thos. J. Hooper,
Harry Gardner,
Ellsworth Reepert.

Archibald Cochran.

Examining board: Wm. Duncan, Inspector; B. F. Keister, superintendent; C. B. Ross, miner.

Successful applicants granted certificates in 1894:

Jas. Eaton,
J. H. Lane,
Jas. Hart,
Robt. Donaldson,
Jas. S. Conner,
J. J. Thomas.

Fred. G. Smith,
J. H. Lane,
Jas. Hart,
Robt. Donaldson,
Jas. S. Conner,
J. J. Thomas,
Simeon Wilson,
John Boylon,
Henry Gray,
Peter Elias.

Examining board: Chas. Conner, Inspector; Harry Whyel, superintendent; C. B. Ross, miner.

Successful applicants granted certificates in 1895:

Staten A. Barnes,
Thos. Thirlwell.

Edward Curry,
John W. Foster,
Thos. Thirlwell,
Michael Calaghan,
Anthony Burns,
Peter Conner,
W. A. Doyle,
Jas. Exton.

Examining board: Chas. Conner, Inspector; Harry Whyel, superintendent; C. B. Ross, miner.

Successful applicants granted certificates in 1896:

Wm. G. Duncan,
John W. Foster.

Wm. G. Duncan.

Examining board: Chas. Conner, Inspector; Harry Whyel, superintendent; C. B. Ross, miner.

Successful applicants granted certificates in 1897:

Chas. E. Porter,
Joshua Taylor,
Simeon Wilson.

Chas. E. Porter,
Jos. J. Jones,
Andrew Rudock,
Luke Shaw,
Henry Farrer,
David Victor.

Examining board: Chas. Conner, Inspector; Harry Wheyl, superintendent; C. B. Ross, miner.

Successful candidates granted certificates in 1899:

Wm. A. Doyle,
David E. Jones,
Luke Shaw.

Jos. H. Williams,
D. B. Davis,
John Havlicheck.

Examining board: Chas. Conner, Inspector; Harry Wheyl, superintendent; Elis Phillips, miner.

Successful applicants granted certificates in 1900:

Robert Williams,
Thomas Charton,
Peter M. Conner,
Norman B. Leichter,
John F. Dawson.

Robert Williams,
Thos. Charlton,
Peter M. Conner,
Norman B. Leichter,
John F. Dawson.
Jas. Cameron.

Examining board: Chas. Conner, Inspector; Harry Wheyl, superintendent; I. G. Roby, miner.

Successful applicants who were granted certificates in 1901:

Frank Foreyder,
Robt. Williams,
John Cole.

Daniel R. Blower,
John Cole,
David Brown,
Joshua Shaffer,
Eugene Bell.

Examining board: Chas. Conner, Inspector; Harry Wheyl, superintendent; I. G. Roby, miner.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Fifth Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
H. C. Frick Coke Co.						
Youngstown,	Fayette,	O. W. Kennedy,	Scottdale,	P. P. Glenn,	Lemont Furnace,	S. W. B. of P. R. R. & B. & O.
Lemont No. 3,	Fayette,	O. W. Kennedy,	Scottdale,	C. M. Shank,	Lemont Furnace,	S. W. B. of P. R. R. & B. & O.
Lemont No. 2,	Fayette,	O. W. Kennedy,	Scottdale,	C. M. Shank,	Lemont Furnace,	S. W. B. of P. R. R. & B. & O.
Lemont No. 1,	Fayette,	O. W. Kennedy,	Scottdale,	C. M. Shank,	Lamont Furnace,	S. W. B. of P. R. R. & B. & O.
Redstone No. 1,	Fayette,	O. W. Kennedy,	Scottdale,	J. M. Simpson,	Redstone,	S. W. B. of P. R. R. & B. & O.
Redstone No. 2,	Fayette,	O. W. Kennedy,	Scottdale,	J. M. Simpson,	Redstone,	S. W. B. of P. R. R. & B. & O.
Oliphant,	Fayette,	O. W. Kennedy,	Scottdale,	R. M. Cook,		S. W. Branch of P. R. R.
Wynn,	Fayette,	O. W. Kennedy,	Scottdale,	R. M. Cook,		S. W. Branch of P. R. R.
Kyle,	Fayette,	O. W. Kennedy,	Scottdale,	Geo. B. Irvin,	Fairchance,	S. W. Branch of P. R. R.
Leisenring No. 2,	Fayette,	O. W. Kennedy,	Scottdale,	Chas. J. Warnick,	West Leisenring,	S. W. Branch of P. R. R.
Leith,	Fayette,	O. W. Kennedy,	Scottdale,	Harry Whyle,	Uniontown,	P. V. & C. B. of P. R. R.
Continental Coke Co.						
Continental No. 1,	Fayette,	O. W. Kennedy,	Scottdale,	C. C. Gadd,	Uniontown,	Coal Lick Run Branch of S. W. B. of P. R. R.
Continental No. 2,	Fayette,	O. W. Kennedy,	Scottdale,	Enoch H. Abraham	Uniontown,	Coal Lick Run Branch of S. W. B. of P. R. R.
Continental No. 3,	Fayette,	O. W. Kennedy,	Scottdale,	D. L. Wilhelm,	Newcomer,	Coal Lick Run Branch of S. W. B. of P. R. R.
Continental No. 4,	Fayette,	O. W. Kennedy,	Scottdale,			Coal Lick Run Branch of S. W. B. of P. R. R.
S. W. Connellsville Coke Co.						
Leckrone No. 1,	Fayette,	O. W. Kennedy,	Scottdale,	John Harding,	Leckrone,	Smithfield Branch of B. & O. & P. R. R.
Leckrone No. 2,	Fayette,	O. W. Kennedy,	Scottdale,	John Harding,	Leckrone,	Also Coal Lick.
Buffington,	Fayette,	O. W. Kennedy,	Scottdale,	M. F. Pickard,	Leckrone,	Coal Lick Run Branch of S. W. B. of P. R. R.
Footdale,	Fayette,	O. W. Kennedy,	Scottdale,	M. F. Pickard,	Leckrone,	Coal Lick Run Branch of S. W. B. of P. R. R.
American Coke Co.						
Lambert,	Fayette,	O. W. Kennedy,	Scottdale,	C. S. Bankard,	Leckrone,	Coal Lick Run Branch of S. W. B. of P. R. R.
Edenborn,	Fayette,	O. W. Kennedy,	Scottdale,	T. D. Williams,	McClellandtown,	Coal Lick Run Branch of S. W. B. of P. R. R.
Gates,	Fayette,	O. W. Kennedy,	Scottdale,	A. E. Reppert,	Ada,	Coal Lick Run Branch of S. W. B. of P. R. R.
Oliver and Snider Steel Co.						
Oliver mine No. 1,	Fayette,	F. C. Keighley,	Uniontown,			
Oliver mine No. 2,	Fayette,	F. C. Keighley,	Uniontown,			

M. R. C. Coal and Coke Co.						
Washington,	Fayette,	O. A. Blackburn,	Pittsburg,	John McVicker,	Roscoe,	River.
Little Alps,	Fayette,	O. A. Blackburn,	Pittsburg,	John McVicker,	Roscoe,	River.
Alice,	Fayette,	O. A. Blackburn,	Pittsburg,	H. L. Henderson,	Roscoe,	River.
Snow Hill,	Fayette,	O. A. Blackburn,	Pittsburg,	John Crumbie,	Roscoe,	River.
Anchor,	Fayette,	O. A. Blackburn,	Pittsburg,	John Porter,	Roscoe,	River.
Stony Hill,	Fayette,	O. A. Blackburn,	Pittsburg,	T. J. Crambie,	Roscoe,	River.
Chamonni,	Fayette,	O. A. Blackburn,	Pittsburg,	T. J. Crambie,	Roscoe,	River.
Climax,	Fayette,	O. A. Blackburn,	Pittsburg,	Wm. Gillie,	Brownsville,	River.
Albany,	Fayette,	O. A. Blackburn,	Pittsburg,	Wm. Gillie,	Brownsville,	River.
Crowthers,	Fayette,	O. A. Blackburn,	Pittsburg,	E. L. Morris,	Fredericktown,	River.
Pittsburg Coal Co.						
Hanna mine,	Fayette,	Geo. W. Schleudenberg,	Pittsburg,	Chas. Connor,	Smock,	P. V. & C. B. of P. R. R. & B. & O.
Grindstone,	Fayette,	Geo. W. Schleudenberg,	Pittsburg,	Chas. Connor,	Smock,	P. V. & C. B. of P. R. R. & B. & O.
Eleanor,	Fayette,	Geo. W. Schleudenberg,	Pittsburg,	Chas. Connor,	Smock,	P. V. & C. B. of P. R. R. & B. & O.
Smock,	Fayette,	Geo. W. Schleudenberg,	Pittsburg,	Chas. Connor,	Smock,	P. V. & C. B. of P. P. R. & B. & O.
W. J. Rainey.						
Mt. Braddock,	Fayette,	T. J. Mitchell,	Connellsville,	J. M. Franklin,	Mt. Braddock,	S. W. B. of P. R. R. & B. & O.
Revere,	Fayette,	T. J. Mitchell,	Connellsville,	F. W. Cunningham	Uniontown,	Coal Lick Run Branch of S. W. B. of P. R. R.
People's Coal Co.						
Pike,	Fayette,	W. J. Thomas,	Charleroi,	S. B. Graham,	Brownsville,	River.
Lake Erie Gas Coal and Coke Co.						
Sumner,	Fayette,	W. P. Bonney,	Erie, Ohio,	Robert Gillie,	Braznell,	P. V. & C. B. of P. R. R.
Lafayette Coke Co.						
Lafayette,	Fayette,	Geo. Whyle,	Uniontown,			P. V. & C. B. of P. R. R.
A. L. Keister & Co.						
Lincoln,	Fayette,	A. L. Keister,	Scottdale,	M. A. McCoombs,	Waltersburg,	P. V. & C. B. of P. R. R.
Percy Mining Co.						
Percy,	Fayette,	Louis DeSaulles,	Percy,	Louis DeSaulles, Jr.	Uniontown,	B. & O.
Stewart Iron Co., Ltd.						
Stewart,	Fayette,	Samuel McClure,	Sharon,	Nathaniel McClure,	Uniontown,	B. & O.
Atlas Coke Co.						
Crossland,	Fayette,	Jas. Henderson,	Uniontown,	Jas. Henderson,	Uniontown,	B. & O.
Edward Snider.						
Snider,	Fayette,	Thos. Clark,	Uniontown.			
Fayette Coke Co.						
Shamrock,	Fayette,	Chas. E. Lenhart,	New Salem,	Reuben street,	New Salem,	Coal Lick B. of P. R. R.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Puritan Coke Co. Parshall,	Fayette,	Wm. Parshall,	McClellandtown,			Coal Lick B. of P. R. R.
Riverview Coal & Coke Co. Donald,	Fayette,	Francis Rocks,	Masontown,			Coal Lick Br. of P. R. R. & M. River.
Bessemer Coke Co. Griffin,	Fayette,	R. L. Martin,	Pittsburg,	John Bitts,	Masontown,	Coal Lick B. of P. R. R.
Acme Coke Co. Acme,	Fayette,	J. R. Cray,	Uniontown,	Wm. Duncan,	Smithfield,	Smithfield Branch of B. & O.
Uniontown Coke Co. Smithfield,	Fayette,	J. D. Boyd,	Uniontown,	B. B. Boyd,	Uniontown,	B. & O.
Joseph Wharton. Bourne,	Fayette,	J. M. Taylor,	Uniontown,	Geo. A. Wetzel,	Smithfield,	B. & O.
H. R. Sackett C. & C. Co. Sackett,	Fayette,	H. R. Sackett,	Outcrop,			B. & O.
Connellsville Coke Co. Connellsville No. 1,	Fayette,	Edwin N. Ohl,	New Castle,	H. M. Wilson,	Gans,	B. & O.
Ada Coal and Coke Co. Ada,	Fayette,	I. W. Semans,	Uniontown,	Arthur Crossland,	Cheat Haven,	B. & O.
Cheat Haven Coal Co. Eagle,	Fayette,	J. T. Fawcett,	Cheat Haven,	Geo. W. Gibson,	Cheat Haven,	B. & O.
E. A. Humphries & Co. Chester,	Fayette,	E. A. Humphries,	Scottdale,	R. J. Humphries,	Vance's Mills,	P. V. & C. B. of P. R. R.
Bute Run C. & C. Co., Ltd. Florence,	Fayette,	R. J. Humphries,	Vance's Mills,			P. V. & C. B. of P. R. R.
Isaac Taylor & Co. Mt. Hope,	Fayette,	Isaac Taylor,	Uniontown,			P. V. & C. B. of P. R. R.

Colonial Coke Co. Colonial, ...	Fayette,.	W. H. Warner, ...	Cleveland, Ohio,.	Joseph Baker, ...	Smock, ...	P. V. & C. B. of P. R. R.
Penn Gas Coal and Coke Co. Penn, ...	Fayette,.	S. W. Henshaw, ...	Uniontown, ...	S. W. Henshaw,...	Uniontown, ...	B. & O.
Sharon Coke Co. Ronco, ...	Fayette,.	W. T. Lewis, ...	Uniontown, ...	....	....	Coal Lick Run Br. of P. R. R.

TABLE II—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Fifth Bituminous District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
H. C. Frick Coke Co.														
Leisenring No. 2,	Fayette,	....	8,198	4,245	375,370	241,951	500	299	478	1	2	....	750	70
Youngstown,	Fayette,	24,231	11,628	8,473	172,559	100,023	241	304	228	......	1	....	....	28
Lemont No. 1,	Fayette,	....	5,728	2,745	208,767	133,529	227	290	238	2	......	....	....	28
Lemont No. 2,	Fayette,	32,936	3,188	1,793	264,511	151,063	350	294	346	1	1	....	50	38
Leith,	Fayette,	15	9,180	2,977	242,780	153,739	308	304	323	2	1	....	....	39
Rdstone,	Fayette,	....	16,600	2,718	365,316	194,665	445	300	399	......	......	....	....	58
Oliphant,	Fayette,	20	5,228	1,579	190,239	122,275	252	290	243	......	......	60	25	31
Kyle,	Fayette,	4,294	2,464	1,707	250,317	161,235	306	303	331	4	3	....	....	52
Wynn,	Fayette,	....	1,074	463	98,954	64,278	130	290	133	......	2	300	....	11
Total,	....	39,688	57,288	26,700	2,108,813	1,322,758	2,759	298	2,719	11	10	360	825	355
Continental Coke Co.														
Continental No. 1,	Fayette,	....	2,417	338	39,565	24,540	224	180	180	......	1	....	....	12
Continental No. 2,	Fayette,	....	4,750	1,214	162,257	104,195	300	303	307	......	......	....	52,000	29
Continental No. 3,	Fayette,	....	3,731	2,941	203,686	131,253	300	292	266	1	2	120	30,000	23
Total,	....	....	10,898	4,493	405,508	259,988	824	258	753	1	3	120	82,000	64
S. W. Connellsville Coke Co.														
Leckrone,	Fayette,	1,213	4,300	2,521	353,250	230,000	400	307	550	1	1	46	102,510	45
Buffington,	Fayette,	....	4,698	474	51,558	30,900	224	196	163	......	2	....	49,698	25
Footdale,	Fayette,	....	3,360	1,212	267,564	175,000	400	310	425	......	1	....	55,350	30
Total,	....	1,213	12,358	4,207	672,372	435,900	1,024	271	1,138	1	4	40	207,558	100

American Coke Co.													
Gates,	Fayette,	89,708	8,298	640	98,646	....	......	320	204	5	3	......	36,980	30
Lambert,	Fayette,	261	7,410	490	53,644	30,322	208	109	278	......	4	......	......	8
Edenborn,	Fayette,	....	8,216	2,212	90,093	53,090	500	315	360	2	......	8	49,700	32
Total,	....	89,969	23,954	3,342	242,383	83,412	708	248	842	7	7	8	86,680	70
Oliver and Snider Steel Co.														
Oliver No. 1,	Fayette,	....	7,356	2,538	322,191	208,191	328	294	348	......	1	......	......	29
Oliver No. 2,	Fayette,	....	6,079	....	376,479	246,796	380	300	428	2	2	......	100	35
Total,	....	....	13,435	2,538	697,670	454,987	708	297	776	2	3	......	100	64
M. R. C. Coal and Coke Co.														
Washington,	Fayette,	143,772	1,641	127	145,540	....	......	219	130	1	1	1,300	......	12
Little Alps,	Fayette,	7,790	4	....	7,794	....	......	57	42	......	......	360	......	3
Alice,	Fayette,	419,708	4,286	10	424,004	....	......	270	199	2	1	3,200	......	17
Anchor,	Fayette,	151,020	2,196	....	153,216	....	......	248	122	1	......	500	......	13
Snow Hill,	Fayette,	99,280	666	....	99,946	....	......	114	193	......	......	600	......	12
Stony Hill,	Fayette,	123,326	212	....	123,538	....	......	238	101	1	1	435	......	10
Chamouni,	Fayette,	183,064	1,112	....	184,176	....	......	111	339	1	......	915	......	24
Climax,	Fayette,	25,354	942	....	26,296	....	......	151	54	......	1	300	......	6
Albany,	Fayette,	242,137	1,820	383	244,340	....	......	245	205	......	1	1,400	......	14
Crowthers,	Fayette,	61,068	621	61	61,750	....	......	120	101	......	......	500	......	14
Total,	....	1,456,519	13,500	581	1,470,600	....	......	177	1,486	6	5	9,510	......	125
Pittsburg Coal Co.														
Hanna,	Fayette,	23,012	147	142	23,301	....	......	118½	43	......	......	100	......	6
Grindstone,	Fayette,	64,633	2,504	576	67,713	....	30	162¼	91	5	1	110	700	11
Eleanor,	Fayette,	43,789	195	60	44,044	....	......	107¼	70	......	......	200	50	18
Smock,	Fayette,	43,700	68	162	43,930	....	......	118¼	71	......	1	190	25	9
Total,	....	175,134	2,914	940	178,988	....	30	178	275	5	2	600	775	34
W. J. Rainey.														
Mt. Braddock,	Fayette,	920	11,000	500	148,320	90,600	490	290	225	1	1	......	500	30
Revere Nos. 1 and 2,	Fayette,	38,000	1,800	2,000	120,000	52,000	450	311	614	2	1	20	6,000	40
Total,	....	38,920	12,800	2,500	268,320	142,600	940	300½	839	3	2	20	6,500	70
Lake Erie Gas Coal & Coke Co.														
Sumner,	Fayette,	85,244	1,324	182	86,750	....	......	201	115	......	2	800	1,200	9
People's Coal Co.														
Pike,	Fayette,	103,966	1,239	135	105,340	....	......	177	209	......	......	1,000	......	15
A. E. Humphries & Co.														
Chester,	Fayette,	....	1,885	549	41,400	33,000	54	300	64	......	......	200	500	6
Bute Run Coal and Coke Co.														
Florence,	Fayette,	....	40	....	13,000	9,750	20	295	24	......	......	......	......	2

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Colonial, Colonial mine,	Fayette,	....	730	466	86,647	57,234	98	275	95	2	......	1,200	40	9
Hero Coal and Coke Co. Hero,	Fayette,	21,650	24	150	39,800	12,000	30	302	59	......	......	600	....	4
A. L. Kiester & Co. Lincoln,	Fayette,	3,624	2,535	773	85,809	53,289	180	299	153	2	1	800	2,000	15
Lafayette Coke Co Lafayette,	Fayette,	16,085	1,080	500	17,665	14,254	80	229	107	......	......	....	....	7
Percy Mining Co. Percy,	Fayette,	9,740	398	....	26,719	16,581	36	311	55	......	......	....	....	8
Stewart Iron Co., Ltd. Stewart,	Fayette,	....	4,348	625	97,102	81,481	155	276	158	......	2	....	....	10
Atlas Coke Co. Crossland,	Fayette,	....	393	106	81,816	55,150	100	308	100	......	2	15	....	9
John Snider & Co. Snider,	Fayette,	....	....	6,893	6,893	....	......	249	9	......	......	35	....	2
Fayette Coke Co. Shamrock,	Fayette,	....	632	573	67,275	49,247	150	268	130	......	......	1,000	....	8
Puritan Coke Co. Parshall,	Fayette,	1,438	25	30	7,583	4,060	32	112	42	......	......	....	300	4

Riverview Coal and Coke Co. Donald,	Fayette,	29,000	4,000	3,000	36,000	....	....	239	48	......	......	200	2,000	6
Bessemer Coke Co. Griffin,	Fayette,	203	....	18	112,158	78,820	304	296	351	......	1	200	37,100	26
Acme Coke Co. Acme,	Fayette,	....	33	47	27,080	19,500	57	248	58	1	......	....	....	4
Uniontown Coke Co. Smithfield,	Fayette,	2,688	12	285	15,120	7.750	19	288	26	......	......	....	....	1
Penn Gas Coal and Coke Co. Penn,	Fayette,	7,346	....	250	7,596	....	....	306	9	......	......	....	....	1
H. R. Sackett Coke Co. Sackett,	Fayette,	3,062	20	60	11,800	5,000	20	202	37	......	......	....	....	2
Joseph Wharton. Bourne,	Fayette,	....	....	347	64,151	43.950	86	280	80	......	......	8	25	6
Connellsville Coke Co. Connellsville No. 1,	Fayette,	....	52	6	13,674	10,033	81	95	90	......	1	70	2,175	5
Isaac Taylor & Co. Mt. Hope,	Fayette,	....	521	....	72,092	47,046	80	294	74	......	......	374	75	8
Cheat Haven Coal Co. Eagle,	Fayette,	27,202	....	....	27,202	....	....	219	57	......	......	302	....	4
Ada Coal and Coke Co. Ada,	Fayette,	5,363	....	50	7,697	2,756	18	160	24	......	......	69	....	2
Grand total,	....	2,118,054	166,038	60,346	7,204,023	3,300.546	8,593	238	11,002	41	45	17,531	129,853	1,055

Recapitulation.

H. C. Frick Coke Co.,	Fayette,	39,688	57,288	26,700	2,108,813	1,322.758	2,759	298 1-9	2,719	11	10	360	825	355
Continental Coke Co.,	Fayette,	....	10,898	4,493	405,508	259,988	824	258 1-3	753	1	3	120	82.000	64
South West Connellsville Coke Co.,	Fayette,	1,213	12,358	4,207	672.372	435,900	1,024	271	1,138	1	4	40	207,558	100
American Coke Co.,	Fayette,	89,969	23,954	3,342	242.383	83,412	708	245 1-3	842	7	7	8	86,680	70
Oliver & Snider Steel Co.,	Fayette,	....	13,435	2,538	698,670	454,987	708	297	776	2	3	....	100	64
M. R. C. Coal and Coke Co.,	Fayette,	1,456,519	13,500	581	1,470,600	....	....	177¾	1,486	6	5	9,510	....	125
Pittsburg Coal Co.,	Fayette,	175.134	2,914	940	178,988	....	30	126 9-16	275	5	2	600	775	34
W. J. Rainey,	Fayette,	38,920	12,800	2,500	268,320	142,600	940	301½	839	3	2	20	6,500	70
Individual collieries,	Fayette,	310,611	18,891	15,045	1,158.369	600,901	1,600	203 13-27	216	5	9	6,873	45,415	173

TABLE II—Continued.

Names of Operators.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
H. C. Frick Coke Co.,	Fayette,	40	1,606	34	3,151	4,757	10	......	......	35	4,415	23	10,169	5,422	2	7
Continental Coke Co.,	Fayette,	......	....	19	1,850	1,850	3	......	......	8	1,400	4	984	329	2	3
South West Connellsville Coke Co.,	Fayette,	......	....	16	2,400	2,400	......	......	......	9	1,000	3	888	300	6	2
American Coke Co.,	Fayette,	......	....	19	2,266	2,266	3	......	......	4	545	5	1,025	483	1	3
Oliver & Snider Steel Co.,	Fayette,	......	....	16	840	840	3	......	......	7	960	1	700	500	1	......
M. R. C. Coal and Coke Co.,	Fayette,	......	....	26	860	2,360	......	......	2	19	1,409	9	1,603	693	4	1
Pittsburg Coal Co.,	Fayette,	1	60	4	380	440	......	......	......	9	1,110	1	650	300	1	......
W. J. Rainey,	Fayette,	......	....	15	1,400	1,400	1	......	......	9	1,500	4	1,112	585	2	4
Individual collieries,	Fayette,	7	280	27	1,098	2,004	1	......	1	26	2,860	14	1,214	584	4	2

TABLE III—Showing the number of each class of employes at each colliery in the Fifth Bituminous District during the year **1901.**

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers, and clerks.	All other employes.	Total outside.	Grand total, inside and outside.
H. C. Frick Coal Co.																		
Leisenring No. 2,	Fayette,	1	3	224	18	30	8	10	294	2	6	7	......	166	3	......	184	478
Youngstown No. 2,	Fayette,	1	2	92	7	13	1	6	122	......	3	9	......	92	2	......	106	228
Lemont No. 1,	Fayette,	1	3	110	10	14	......	3	141	1	3	7	......	85	1	......	97	238
Lemont No. 2,	Fayette,	1	2	150	14	21	2	2	192	1	5	4	......	144	3	......	154	346
Leith,	Fayette,	1	3	130	12	28	4	4	182	2	5	10	......	122	2	......	141	323
Redstone,	Fayette,	2	3	155	15	23	1	5	204	3	7	12	......	170	3	......	195	399
Oliphant,	Fayette,	1	1	120	5	12	......	9	148	1	3	4	......	85	2	......	95	243
Kyle,	Fayette,	1	1	150	5	17	3	6	183	1	6	6	......	132	3	......	148	331
Wynn,	Fayette,	1	1	60	2	7	......	5	76	1	2	4	......	48	2	......	57	133
Total,		10	19	1,191	88	165	19	50	1,542	12	40	63	......	1,041	21	......	1,177	2,719
Continental Coke Co.																		
Continental No. 1,	Fayette,	1	1	105	2	4	1	10	124	1	2	4	......	47	2	......	56	180
Continental No. 2,	Fayette,	1	2	146	3	16	6	17	191	3	5	4	1	100	3	......	116	307
Continental No. 3,	Fayette,	1	1	141	3	13	2	9	170	1	4	6	......	83	2	......	96	266
Total,		3	4	392	8	33	9	36	485	5	11	14	1	230	7	......	268	753
South West Connellsville Coke Co.																		
Leckrone,	Fayette,	2	......	210	4	21	2	3	242	3	7	4	......	290	4	......	308	550
Buffington,	Fayette,	1	2	60	12	10	......	8	93	3	5	7	......	53	2	......	70	163
Footdale,	Fayette,	2	1	200	10	20	3	16	252	1	8	6	......	154	4	......	173	425
Total,		5	3	470	26	51	5	27	587	7	20	17	......	497	10	......	551	1,138

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers, and clerks.	All other employes.	Total outside.	
American Coke Co.																		
Gates,	Fayette,	1	1	75	15	11	4	40	147	1	10	9	......	......	2	35	57	204
Lambert,	Fayette,	1	1	127	24	8	6	2	169	1	5	5	......	96	2	......	109	278
Edenborn,	Fayette,	1	1	111	20	13	4	62	212	2	6	8	......	130	2	......	148	360
Total,		3	3	313	59	32	14	104	528	4	21	22	......	226	6	35	314	842
Oliver and Snider Steel Co.																		
Oliver No. 1,	Fayettte,	2	3	158	......	18	......	33	214	1	7	5	......	119	2	......	134	348
Oliver No. 2,	Fayette,	1	3	204	......	29	3	38	278	1	6	4	......	137	2	......	150	428
Total,		3	6	362	......	47	3	71	492	2	13	9	......	256	4	......	284	776
M. A. C. Coal and Coke Co.																		
Washington,	Fayette,	1	1	97	......	12	2	2	115	......	2	3	......	......	2	8	15	130
Little Alps,	Fayette,	1	......	33	......	3	1	1	38	......	1	......	......	......	1	2	4	42
Alice,	Fayette,	1	3	150	......	19	4	4	182	......	3	4	......	......	2	8	17	199
Snow Hill,	Fayette,	1	2	150	......	12	4	6	175	......	2	2	......	......	2	12	18	193
Anchor,	Fayette,	1	......	74	......	12	1	19	107	......	2	3	......	......	2	8	15	122
Stony Hill,	Fayette,	1	......	75	......	10	2	4	92	......	2	1	......	......	2	4	9	101
Chamouni,	Fayette,	1	1	270	......	21	3	10	307	......	3	3	......	......	2	24	32	339
Climax,	Fayette,	1	1	40	......	5	......	2	49	......	1	2	......	......	1	1	5	54
Crowthers,	Fayette,	1	......	75	......	10	1	3	89	......	2	2	......	......	2	7	12	101
Albany,	Fayette,	1	2	150	......	12	2	18	185	......	3	4	......	......	2	11	20	205
Total,		10	11	1,014	......	116	20	69	1,339	......	21	24	......	......	18	85	147	1,486

Pittsburg Coal Co.																		
Smock,	Fayette,	1	1	47	2	3	1	4	59	1	2	2	......	......	1	6	12	71
Eleanor,	Fayette,	1	......	52	2	4	......	1	60	1	2	1	......	......	1	5	10	70
Grindstone,	Fayette,	1	2	64	1	4	1	4	77	1	2	4	......	......	1	6	14	91
Hanna,	Fayette,	1	......	31	1	3	1	2	39	1	1	......	......	......	1	1	4	43
Total,	......	4	3	194	6	14	3	11	235	4	7	7	......	......	4	18	40	275
W. J. Rainey.																		
Mt. Braddock mine,	Fayette,	1	2	100	10	14	......	6	130	2	6	9	......	75	3	20	95	225
Revere Nos. 1 and 2,	Fayette,	2	......	145	10	12	1	2	172	4	25	7	......	400	6	42	442	614
Total,	......	3	2	245	20	26	1	8	302	6	31	16	......	475	9	62	537	839
People's Coal Co.																		
Pike,	Fayette,	1	1	155	......	12	......	15	184	1	4	3	......	......	2	15	25	209
Lake Erie Gas Coal Co.																		
Sumner,	Fayette,	1	1	85	7	6	1	1	102	1	2	4	......	......	3	3	13	115
E. A. Humphries & Co.																		
Chester,	Fayette,	1	......	33	3	3	......	2	42	......	1	4	......	15	2	......	22	64
Bute Run Coal and Coke Co.																		
Florence,	Fayette,	1	......	12	1	1	......	......	15	......	......	......	......	8	1	......	9	24
Colonial Coke Co.																		
Colonial,	Fayette,	1	......	45	2	5	......	......	53	1	1	1	......	37	2	......	42	95
Hero Coal and Coke Co.																		
Hero,	Fayette,	1	......	28	......	4	1	......	34	1	1	1	......	21	1	......	25	59
A. L. Keister & Co.																		
Lincoln,	Fayette,	1	1	60	......	9	......	10	81	2	4	4	......	60	2	......	72	153
Lafayette Coke Co.																		
Lafayette,	Fayette,	1	......	60	2	5	......	......	68	1	2	1	......	32	3	......	39	107
Percy Mining Co.																		
Percy,	Fayette,	1	......	20	6	4	......	1	32	......	1	1	......	19	2	......	23	55
Stewart Iron Co., Ltd.																		
Stewart,	Fayette,	1	1	60	......	6	......	12	80	1	2	3	......	70	2	......	78	158
Atlas Coke Co.																		
Crossland,	Fayette,	1	......	45	2	4	......	1	53	1	1	1	......	42	2	......	47	100
John Snider & Co.																		
Snider,	Fayette,	......	......	7	......	1	......	......	8	1	......	......	......	......	......	......	1	9
Fayette Coke Co.																		
Shamrock,	Fayette,	1	......	71	......	5	......	2	78	1	2	2	......	43	4	......	52	130

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total inside outside.
		Inside foreman or mine boss.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Puritan Coke Co. Parshall,	Fayette,	1	......	22	2	2	......	......	27	......	......	1	.....	13	1	......	15	42
Riverview Coal and Coke Co. Donald,	Fayette,	1	......	30	......	2	......	1	34	1	2	3	......	......	3	5	14	48
Bessemer Coke Co. Griffin,	Fayette,	1	......	116	4	7	2	5	135	1	3	......	.....	210	2	......	216	351
Acme Coke Co. Acme,	Fayette,	1	......	30	2	2	......	2	37	......	1	......	.....	20	......	......	21	58
Uniontown Coke Co. Smithfield,	Fayette,	1	......	8	......	1	......	......	10	......	......	.....	.....	16	......	......	16	26
Penn Coke Co. Penn,	Fayette,	......	......	6	......	1	......	1	8	......	......	.....	.....	......	1	......	1	9
H. R. Sackett Coal and Coke Co. Sackett,	Fayette,	1	......	12	......	1	......	1	15	......	1	......	......	20	1	......	22	37
Joseph Wharton. Bourne,	Fayette,	1	......	38	2	5	......	......	46	......	1	......	......	31	2	......	34	80
Connellsville Coke Co. Connellsville No. 1,	Fayette,	1	......	40	2	3	1	3	50	1	1	4	1	32	2	......	40	90

Ada Coal and Coke Co.																		
Ada,	Fayette,	1	.....	15	2	1	1	.....	20	.....	1	.....	1	.....	1	1	4	24
Isaac Taylor & Co.																		
Mt. Hope,	Fayette,	1	.....	40	2	5	.....	.....	47	1	.....	1	.....	24	1	24	27	74
Cheat Haven Coal Co.																		
Eagle,	Fayette,	1	.....	44	1	4	.....	.....	50	1	2	.....	1	.....	1	2	7	57

Recapitulation.

H. C. Frick Coke Co.,	Fayette,	10	19	1,185	88	165	19	50	1,536	12	40	63	.....	1,041	21	.....	1,178	2,719
Continental Coke Co.,	Fayette,	3	4	392	8	33	9	36	485	5	11	14	1	230	7	.....	268	753
South Connelsville Coke Co.,	Fayette,	5	3	470	26	51	5	27	587	7	20	17	.....	497	10	.....	551	1,138
American Coke Co.,	Fayette,	3	3	313	59	32	14	104	528	4	21	22	.....	226	6	35	314	842
Oliver and Snider Steel Co.,	Fayette,	3	6	362	.....	47	3	71	492	2	13	9	.....	256	4	.....	284	776
M. R. C. Coal and Coke Co.,	Fayette,	10	11	1,114	.....	116	20	69	1,340	.....	20	24	.....	.....	18	85	147	1,486
Pittsburg Coal Co.,	Fayette,	4	3	194	6	14	3	11	235	4	7	7	.....	.....	4	18	40	275
W. J. Rainey,	Fayette,	3	2	245	20	26	1	8	305	6	31	16	.....	475	9	62	537	839
People's Coal Co.,	Fayette,	1	1	155	.....	12	.....	15	184	1	4	3	.....	.....	2	15	25	209
Lake Erie Gas, Coal and Coke Co.,	Fayette,	1	1	85	7	6	1	1	102	1	2	4	.....	.....	3	3	13	115
Individual operators,	Fayette,	21	1	842	33	81	5	41	1,024	14	27	27	3	713	36	27	827	1,850

TABLE III—Continued.

Names of Operators.	County.	Number of Days Worked in Each Month.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
H. C. Frick Coke Co.,	Fayette,	23 2-3	23 5-9	25 8-9	25 8-9	25 8-9	23 8-9	26	25 1-9	23 2-3	25	25 8-9	23 4-9	298 1-9
Continental Coke Co.,	Fayette,	27	23½	26	25	25½	24 2-3	26½	27	25	25 2-3	24 2-3	20 1-3	258 1-3
South Connelsville Coke Co.,	Fayette,	26½	24	26	26	23 1-3	25	26	27	25	27	25 1-3	24	271
American Coke Co.,	Fayette,	26½	25½	25½	26½	27	26½	27	20½	25	27	25 2-3	24 1-3	245 1-3
Oliver & Snider Steel Co.,	Fayette,	27	23	25¾	24½	25½	25	25½	24½	24	27	24	21½	297
M. R. C. Coal and Coke Co.,	Fayette,	22 7-9	14	21	17 8-9	21	22⅜	17 4-7	21½	19 2-5	24 1-3	19½	12 2-9	177¾
Pittsburg Coal Co.,	Fayette,	11¾	4⅜	6 1-6	14½	15 5-6	12 3-8	14¾	10 1-16	14 5-8	14 3-16	10 5-8	10 15-16	126 9-16
W. J. Rainey,	Fayette,	26	23½	25½	25	26	26	26	25½	24½	25	24	24½	301½
People's Coal Co.,	Fayette,	....	....	....	....	12	25	25	25	22	27	20	21	177
Lake Erie Gas, Coal and Coke Co.,	Fayette,	15	13	4	21	22	21	25	14	20	19	17	10	201
Individual operators,	Fayette,	23	20	20	25	24	22	21½	23½	22½	21	22	22	232

TABLE IV—List of fatal accidents that occurred in and about the mines of the Fifth Bituminous District for the year ending December 31, 1901.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan. 15	Steve Shokane,	Slav,	Miner,	46	M.	1	....	Kyle,	Fayette,	Fatally injured by a fall of slate.
Feb. 2	John Mugar,	Slav,	Miner,	40	S.	....	....	Lincoln,	Fayette,	Fatally burned by a blown out shot; died Feb. 6th in hospital.
11	James Plunkett,	American,	Miner,	63	S.	....	....	Washington,	Fayette,	Instantly killed by a fall of slate.
14	George Stiffy,	Slav,	Miner,	36	M.	1	3	Chamouni,	Fayette,	Instantly killed by a fall of slate.
18	Dominic Dunyan,	Italian,	Miner,	25	S.	....	....	Grindstone,	Fayette,	Instantly killed by a premature explosion of a blast.
21	John Juback,	Slav,	Miner,	29	M.	1	1	Leith,	Fayette,	Instantly killed by a fall of slate.
March 19	William McFadden,	American,	Driver,	31	S.	....	....	Kyle,	Fayette,	Fatally injured; kicked by a mule.
25	Thomas Montuth,	American,	Driver,	21	S.	....	....	Acme,	Fayette,	Fatally injured; caught between car and rib.
25	James Wilson,	American,	Miner,	33	S.	....	....	Gates	Fayette,	Fatally burned by an explosion of gas.
25	Gibson Gilmore,	American,	Miner,	42	M.	1	....	Gates,	Fayette,	Fatally burned by an explosion of gas.
25	James Murphy,	American,	Miner,	24	M.	1	....	Gates,	Fayette,	Fatally burned by an explosion of gas.
25	George Pedesco,	Slav,	Miner,	23	M.	1	....	Gates,	Fayette,	Fatally burned by an explosion of gas.
26	John Burrow,	Austrian,	Miner,	32	S.	....	....	Snow Hill,	Fayette,	Fatally injured by a fall of slate.
May 6	Charles Ferry,	American,	Driver,	19	M.	1	....	Oliver No. 2,	Fayette,	Instantly killed; caught between car and rib.
6	John Namet,	Austrian,	Miner,	30	M.	1	3	Leisenring No. 2,	Fayette,	Instantly killed by a fall of slate.
12	Mike Popish,	Slav,	Miner,	24	S.	....	....	Grindstone,	Fayette,	Instantly killed by a fall of slate.
30	John Moriety,	American,	Driver,	21	S.	....	....	Mt. Braddock,	Fayette,	Instantly killed; being thrown against rib from a car.
June 25	Paul Kuyak,	Slav,	Loader,	40	M.	1	4	Alice,	Fayette,	Instantly killed by a fall of slate.
July 27	Thomas Gibbon,	Irish,	Driver,	40	M.	1	5	Leith,	Fayette,	Instantly killed between car and rib.
Aug. 1	William Hughs,	American,	Driver,	24	S.	....	....	Edenborn,	Fayette,	Instantly killed by falling under car.
2	Mike Maezinki,	Austrian,	Miner,	20	S.	....	....	Lemont No. 2,	Fayette,	Instantly killed by a fall of slate.
21	John Buckett,	Slav,	Miner,	26	M.	1	2	Oliver No. 2,	Fayette,	Instantly killed by a side fall from rib.
23	Mike Polostoski,	Slav,	Miner,	43	M.	1	5	Alice,	Fayette,	Instantly killed by a fall of coal.
27	Jacob Smai,	Austrian,	Miner,	38	M.	1	4	Gates,	Fayette,	Instantly killed by slate falling from roof.
Sept. 5	James Shortuse,	English,	Driver,	38	M.	1	4	Leith,	Fayette,	Fatally injured by falling under car.
14	Robert Manst,	American,	Driver,	26	M.	1	....	Lemont No. 1,	Fayette,	Fatally injured; caught between post and car.

TABLE IV—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Oct.	2	Jas. N. Simpson,	American,	Boss hauler,	35	M.	1	4	Colonial,	Fayette,	Fall of roof.
	2	Thos. H. Ashman,	English,	Rope rider,	25	S.	....	....	Colonial,	Fayette,	Fall of roof.
	24	Jasper Craig,	American,	Machinist,	39	M.	1	4	Lincoln,	Fayette,	Instantly killed by cars.
Nov.	9	Tony Morgrilla,	Italian,	Miner,	33	M.	1	5	Lemont No. 3,	Fayette,	Instantly killed by a fall of coal.
	15	Mike Sucha,	Slav,	Laborer,	25	M.	1	1	Revere,	Fayette,	Instantly killed by fan catching his clothes.
	22	Ephraim Dixon,	American,	Driver,	19	M.	1	....	Revere,	Fayette,	Instantly killed; caught between car and rib.
	22	Mike McCormick,	Irish,	Watchman,	50	M.	1	2	Edenborn,	Fayette,	Instantly killed by falling into shaft.
	22	William L. Codey,	American,	Roadman,	41	M.	1	4	Kyle,	Fayette,	Instantly killed by a fall of slate.
	22	Joseph Zayack,	Slav,	Miner,	28	M.	1	2	Kyle,	Fayette,	Instantly killed by a fall of slate.
	28	John Slifka,	Slav,	Miner,	34	S.	....	....	Leckrone No. 2,	Fayette,	Instantly killed by a fall of slate.
Dec.	3	William C. Heath,	American,	Mining engineer	32	S.	....	....	Grindstone,	Fayette,	Fatally injured by an explosion of gas.
	3	Charles Zimmerman,	American,	Mining engineer	22	S.	....	....	Grindstone,	Fayette,	Fatally injured by an explosion of gas.
	3	George Crosby,	American,	Mining engineer	19	S.	....	....	Grindstone,	Fayette,	Fatally injured by an explosion of gas.
	7	John Katson,	Slav,	Miner,	27	S.	....	....	Continental No. 3,	Fayette,	Instantly killed by a fall of slate.
	12	Andy Donish,	Slav,	Miner,	34	M.	1	1	Anchor	Fayette,	Instantly killed by fall of coal.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Fifth Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	1	Steve Omasta,	Slav,	Miner,	31	S.	Gates,	Fayette,	Severely bruised by a fall of slate.
	5	W. C. Miller,	American,	Driver,	34	M.	Kyle,	Fayette,	Collar bone broken by timber.
	18	Nabert Johnson,	American,	Miner,	40	S.	Stony Hill,	Fayette,	Fracture of leg by fall of slate.
Feb.	1	John Loves,	Austrian,	Miner,	30	M.	Oliver No. 2,	Fayette,	Leg broken by a fall of slate.
	2	John Boblc,	Slav,	Miner,	31	S.	Lincoln,	Fayette,	Severely injured by a premature blast.
	4	Joseph Goowin,	American,	Driver,	22	S.	Footdale,	Fayette,	Three ribs broken; caught between car and rib.
	15	Jesse Harrington,	American,	Miner,	36	S.	Cllmax,	Fayette,	Severely injured by a fall of coal and slate.
	15	Frank Baylis,	American,	Miner,	26	S.	Kyle,	Fayette,	Painfully injured by a fall of coal and slate.
March	2	George Dennison,	American,	Miner,	38	M.	Stewart,	Fayette,	Two ribs broken by a fall of slate.
	9	Henry Rosner,	German,	Dumper,	19	S.	Crossland,	Fayette,	Injured at the tipple.
	19	Livering Bittle,	American,	Miner,	18	S.	Crossland,	Fayette,	Painfully bruised; caught between car and rib.
April	15	John Corpinski,	Pole,	Miner,	31	M.	Leith,	Fayette,	Leg broken by a fall of slate.
	17	Patrick O'Rorick,	Irish,	Fire boss,	44	M.	Leisenring No. 2,	Fayette,	Injured by a fall of coal and slate.
	25	Joseph Shetland,	American,	Driver,	21	S.	Mt. Braddock,	Fayette,	Leg broken by falling in front of cars.
June	3	John Mackey,	Finn,	Miner,	30	S.	Washington,	Fayette,	Arm broken by a fall of slate.
	11	Henry Brockway,	American,	Cager,	28	M.	Continental No. 1,	Fayette,	Collar bone broken by a fall of slate.
	22	George Hocrin,	Hungarian,	Miner,	25	M.	Sumner,	Fayette,	Bruised about body by a fall of slate.
July	2	George Pievoznak,	Slav,	Miner,	30	M.	Lemont No. 2,	Fayette,	Ankle broken by a fall of coal.
	11	Frank Scupion,	Austrian,	Miner,	35	S.	Oliver No. 1,	Fayette,	Leg broken by a fall of coal and slate.
	13	Paul Zorna,	Pole,	Miner,	44	M.	Continental No. 3,	Fayette,	Painfully bruised about body by a fall of roof.
	20	John Yonnick,	Pole,	Miner,	43	M.	Continental No. 3,	Fayette,	Back broken by a fall of slate.
	27	Mike Bushnack,	Slav,	Miner,	42	M.	Sumner,	Fayette,	Fracture of leg; coal fell from face of room.
	27	Joseph Roman,	Austrian,	Miner,	35	M.	Revere,	Fayette,	Ribs fractured by a fall of coal and slate
Aug.	6	Mike Goborky,	Italian,	Miner,	14	S.	Albany,	Fayette,	[illegible] broken by a fall of slate.
	24	Anthony Berk,	Irish,	Roadman,	40	M.	Buffington,	Fayette,	Painfully bruised by fall of slate.
	26	Norman Smith,	American,	Miner,	24	M.	Wynn,	Fayette,	Injured by a premature blast
Sept.	6	William Murey,	English,	Miner,	41	M.	Smock,	Fayette,	[illegible] by a fall of slate.

TABLE V—Continued.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
30	Clement Devite,	Italian,	Hitcher,	28	S.	Leckrone No. 1,	Fayette,	Leg crushed between cars.
Oct. 3	Jacob Roebuck,	Pole,	Miner,	35	M.	Oliver No. 1,	Fayette,	Three ribs broken by a fall of slate in working place.
28	John Burrow,	American,	Driver,	14	S.	Youngstown,	Fayette,	Jaw broken; kicked by a mule.
Nov. 2	Mike Rossilla,	Slav,	Driver	30	S.	Gates,	Fayette,	Bruised about body; caught between rib and car.
9	William Eale	American,	Miner,	19	S.	Alice,	Fayette,	Arm broken and collar bone injured; fall of slate.
13	William Page,	Italian,	Miner,	19	S.	Wynn	Fayette,	Severely injured by fall of slate.
14	Thomas Monahan,	Irish,	Mirer,	65	M	Stewart	Fayette,	Severely injured by fall of slate.
18	William Feathers,	American	Driver,	26	M.	Gates	Fayette,	Injured between car and door.
2	Emil Fallacher,	American	Machine runner	28	M	Buffington,	Fayette,	Leg fractured by a fall of slate.
11	Joseph Shanabarger,	American	Roadman,	31	M	Kyle,	Fayette,	Severely bruised by fall of slate.
26	John Hinnich,	Austrian	Miner,	37	M.	Leisenring No. 2,	Fayette,	Four fingers cut off by a car.
28	Michael Gorditch,	Slav,	Miner,	30	S.	Lambert,	Fayette,	These four men were injured by reason of the engineer failing to keep control of his engine while lowering them into the shaft.
28	George Donkarts,	Slav,	Miner,	37	M.	Lambert,	Fayette,	
28	Peter Babiack,	Slav,	Miner,	38	M.	Lambert,	Fayette,	
28	Steve Molliatinsky,	Slav,	Miner,	29	M.	Lambert,	Fayette,	
Dec. 2	Lester Blainey,	American,	Driver,	30	M.	Connellsville No. 1,	Fayette,	Bruised about body by mine locomotive.
3	Carrol Kerney,	American,	Mining engineer	29	M.	Grindstone,	Fayette,	Painfully injured by an explosion of gas.
28	John Hudzel,	American,	Driver,	28	M.	Griffin,	Fayette,	Painfully injured, thrown against rib.

Sixth Bituminous District.

CAMBRIA AND SOMERSET COUNTIES.

Johnstown, Pa., February 27, 1902.

Hon. James W. Latta, Secretary of Internal Affairs, Harrisburg, Pa.:

Sir: I have the honor of presenting herewith my report as Inspector of the Sixth Bituminous District for the year 1901. It contains the usual tables, with an additional one on ventilation, giving the method, capacity of ventilators, and number of air splits in each mine.

I am pleased to report a reduction in the number of accidents in the district and a general improvement in the sanitary condition of the mines. The total production of coal was 6,848,954 tons, the fatal accidents numbered eighteen. This shows a production of 380,497 tons per fatal accident, and 559 persons were employed per fatal accident. I consider this a creditable showing, but hope and expect better results in the future if the vigilance now exercised by mine officials is continued, and there is a strict adherence by the men to the rules and regulations laid down by the law and the operators, to prevent accidents.

Remarks on the ventilation of mines, accidents, etc., will be found in another part of this report.

Respectfully,

J. T. EVANS.

Statistical Table.

Number of mines in the district,	82
Number of mines reporting production,	80
Number of tons of coal produced,	6,848,954
Number of tons used for steam at mines,	146,731
Number of tons sold to employes,	15,258
Number of persons employed inside the mines,	9,123
Number of persons employed outside the mines,	943
Total number of persons employed,	10,066
Number of fatal accidents,	18
Number of non-fatal accidents,	31

Number of tons of coal produced per fatal accident, ..	380,497
Number of tons produced per non-fatal accident, ...	220,934
Number of persons employed per fatal accident, ...	559
Number of persons employed per non-fatal accident,	324
Number of kegs of powder used, ...	32,798
Number of pounds of dynamite used, ...	61,130
Number of cylindrical boilers in use, ...	22
Number of tubular boilers in use, ...	110
Total horsepower of boilers, ...	16,465
Number of electric dynamos, ...	33
Number of electric motors, ...	65
Number of air locomotives, ...	3
Number of new mines opened, ...	6
Tons of coal mined along Pennsylvania Railroad, ...	6,343,874
Tons mined along Baltimore and Ohio Railroad, ...	505,107

	Causes of Fatal Accidents.							Occupations of Persons Fatally Injured.				Nationalities of Persons Fatally Injured.							
	Mine wagons.	Falls of coal.	Falls of rock.	Electric wires.	Electric motor.	Wire rope.	Total.	Miners.	Loaders.	Trackman.	Total.	Americans.	English.	Welsh.	Poles.	Slavs.	Austrians.	Norwegians.	Total.
January,	1	2					3	2	1		3				1	1	1		3
Februray,				1			1		1		1						1		1
March,			2	1			3	3			3	2						1	3
April,																			
May,		1	1	1	1		4	3		1	4	1			1	1	1		4
June,	1				1	1	3	3			3		1		1	1			3
July,																			
August,		1					1	1			1		1						1
September,		1					1	1			1			1					1
October.																			
November,			1				1	1			1					1			1
December,		1					1	1			1					1			1
	2	6	4	3	2	1	18	15	2	1	18	3	2	1	3	5	3	1	18

	Causes of Non-Fatal Accidents.								Occupations of Persons Injured.							Nationalities of Persons Injured.											
	Mine wagons.	Falls of coal.	Falls of rock.	Electric motor.	Hauling rope.	Gap.	Powder.	Total.	Miner.	Loader.	Driver.	Motorman.	Brakeman.	Weighmaster.	Total.	Americans.	Welsh.	Irish.	Scotch.	Poles.	Slavs.	Hungarians.	Italians.	Austrians.	Belgians.	French.	Total.
January,	2	2	1	....	....	....	....	5	4	....	1	....	....	....	5	3	....	....	....	....	....	....	....	1	1	....	5
February,	1	1	1	....	....	....	....	3	1	2	....	....	....	....	3	1	....	....	....	....	2	....	....	....	....	....	3
March,	1	....	....	1	....	....	....	2	....	....	1	....	1	....	2	2	....	....	....	....	....	....	....	....	....	....	2
April,	....	1	....	....	....	....	....	1	1	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....	....	1
May,	1	....	1	....	1	....	....	3	3	....	....	....	....	....	3	....	....	1	....	....	1	....	1	....	....	....	3
June,	1	....	1	....	....	....	....	2	1	....	1	....	....	....	2	....	....	1	1	....	....	....	....	....	....	....	2
July,	....	....	....	....	....	1	....	1	1	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....	....	1
August,	2	1	2	....	1	....	....	6	3	....	2	....	....	1	6	3	1	....	....	1	1	....	....	....	....	....	6
September,	2	....	....	....	....	....	....	2	1	....	1	....	....	....	2	1	....	....	....	1	....	....	....	....	....	....	2
October,	....	....	....	....	....	....	1	1	1	....	....	....	....	....	1	....	....	....	....	....	....	1	....	....	....	....	1
November,	1	1	....	1	....	....	....	3	1	....	....	1	1	....	3	2	....	....	....	....	1	....	....	....	....	....	3
December,	....	1	1	....	....	....	....	2	2	....	....	....	....	....	2	....	....	....	....	....	....	1	....	....	....	1	2
	11	7	7	2	2	1	1	31	19	2	6	1	2	1	31	12	1	2	1	4	5	2	1	1	1	1	31

Names of Collieries and Operators.	Kind of opening.	Seam of coal worked.	Haulage.	Pick or machine.	Motive power.	Type of machine.	Number used.	Coal mined by machines.	Coal mined by picks.
Berwind-White C. M. Co.									
Eureka No. 30,	Drift,	B or Miller,	Electric motors,	Machines,	Compressed air,	Ingersoll and Sullivan.	33	476,815	....
Eureka No. 31,	Drift,	B or Miller,	Electric motors,	Machines,	Compressed air,	Ingersoll and Sullivan.	35	377,800	....
Eureka No. 32,	Drift,	B or Miller,	Electric motors,	Machines,	Compressed air,	Ingersoll and Sullivan.	28	304,242	....
Eureka No. 33,	Drift,	B or Miller,	Electric motors,	Machines,	Compressed air,	Ingersoll and Sullivan.	24	226,921	....
Eureka No. 34,	Drift,	B or Miller,	Electric motors,	Machines,	Compressed air,	Ingersoll and Sullivan.	28	310,669	....
Eureka No. 35,	Drift,	B or Miller,	Electric motors,	Machines,	Compressed air,	Ingersoll and Sullivan.	34	388,547	....
Eureka No. 36,	Drift,	B or Miller,	Electric motors,	Machines,	Compressed air,	Ingersoll and Sullivan.	26	216,591	....
Eureka No. 37,	Drift,	B or Miller,	Electric motors,	Machines,	Compressed air,	Ingersoll and Sullivan.	26	169,701	....
Eureka No. 38,	Drift,	B or Miller,	Electric motors,	Machines,	Compressed air,	Ingersoll and Sullivan.	....	....	....
Eureka No. 39,	Drift,	B or Miller,	Electric motors,	Machines,	Compressed air,	Ingersoll and Sullivan.	....	....	....
Yellow Run shaft,	Shaft,	B or Miller,	Rope and mules,	Pick,	....	....	....	....	193,064
Webster Coal and Coke Co.									
Webster No. 1,	Drift,	B or Miller,	Electric motor,	Pick,	....	....	....	....	63,434
Webster No. 2,	Slope,	B or Miller,	Rope and mules,	Machine,	Compressed air,	Sullivan,	8	57,839	....
Webster No. 3,	Drift,	B or Miller,	Electric,	Pick and machine.	Compressed air,	Ingersoll and Sullivan.	4	6,000	150,121
Webster No. 5,	Slope,	B or Miller,	Rope and mules,	Pick and machine.	Compressed air,	....	5	3,000	140,230
Webster No. 6,	Drift,	D or Moshanon.	Electric motor,	Pick and machine.	Compressed air,	....	6	8,000	42,712
Webster No. 8,	Drift,	D or Moshanon.	Electric motor,	Pick and machine.	Compressed air,	....	2	7,970	....
Webster No. 15,	Shaft,	B. or Miller,	Mules,	Pick,	....	....	....	....	21,448

Names of Collieries and Operators.	Kind of opening.	Seam of coal worked.	Haulage.	Pick or machine.	Motive power.	Type of machine.	Number used.	Coal mined by machines.	Coal mined by picks.
Puritan Coal Mining Co.									
Puritan No. 1,	Shaft,	B. or Miller,	Electric motor,	Pick,					167,812
Puritan No. 2,	Drift,	B. or Miller,	Mules,	Pick,					15,860
Puritan No. 3,	Slope,	B. or Miller,	Electric motor,	Pick,					44,276
Cambria Steel Co.									
Rolling Mill,	Drift,	C prime,	Rope and compressed air motor.	Machines,	Compressed air,	Ingersoll, Sergeant.	27	601,661	
Conemaugh slope,	Slope,	E or Lemon,	Rope and mules,	Pick,					131,737
Franklin slope,	Slope,	B or Miller,	Endless chain,	Machine,		Ingersoll, Sergeant.	4	14,047	
Franklin slope No. 1,	Drift,	C prime,	Mules,	Pick,					127,859
Franklin slope No. 2,	Drift,	C prime,	Mules,	Pick,					
W. H. Piper & Co.									
Sonman No. 1,	Drift,	B or Miller,	Rope and mules,	Pick,					34,126
Sonman No. 2,	Drift,	B or Miller,	Rope and mules,	Pick,					102,691
Sonman No. 3,	Slope,	B or Miller,	Rope and mules,	Machine,	Compressed air,	Ingersoll, Sergeant.	2	10,000	
Sonman No. 4,	Drift,	B or Miller,	Mules,	Machine,					24,236
Coulter & Huff.									
Argyle,	Drift,	B or Miller,	Rope and mules,	Machine,				177,213	
Conemaugh,	Drift,	B or Miller,	Mules,	Machine,					41,794
Kokomo,	Drift,	E or Lemon,	Mules,	Machine,					7,722
George Pierce & Sons.									
Calwell,	Drift,	C prime,	Mules,	Pick,					8,500
Excelsior,	Drift,	B or Miller,	Mules,	Pick,					6,975
A. J. Haws & Sons, Ltd.									
Haws shaft,	Shaft,	B or Miller,	Mules,	Pick,					35,000
Coopersdale,	Drift,	B or Miller,	Mules,	Pick,					8,980

Loyalhanna Coal and Coke Co.									
Sonman shaft No. 1,	Shaft,	B or Miller,	Rope,	Pick,	....	....	....	....	149,139
Loyalhanna No. 3,	Drift,	B or Miller,	Rope,	Pick,	....	....	....	....	13,491
A. F. Clark & Co.									
Stony Creek,	Drift,	B or Miller,	Mules,	Pick,	....	....	....	....	9,332
Somerset,	Drift,	B or Miller,	Mules,	Pick,	....	....	....	....	3,511
Geo. B. Newton & Co.									
Hoffer,	Drift,	E or Lemon,	Mules,	Pick,	....	....	....	....	12,894
Plain,	Drift,	E or Lemon,	Mules,	Pick,	....	....	....	....	3,353
C. A. Buch.									
Alton,	Drift,	B or Miller,	Mules,	Pick,	....	....	....	....	63,055
S. Hamilton Coal Co.									
Adams,	Drift,	C prime or Listie,	Rope and mules,	Pick,	....	....	....	....	32,907
Cambria Coal Mining Co.									
Anchor,	Drift,	B or Miller,	Mules,	Pick,	....	....	....	....	18,857
D. Laughman and J. Leahy.									
Bear Rock,	Drift,	B or Miller,	Mules,	Pick,	....	....	....	....	31,308
Bando Coal Co.									
Bando,	Drift,	B or Miller,	Mules,	Pick,	....	....	....	....	6,264
Bethel Coal Co.									
Bethel,	Drift,	B or Miller,	Mules,	Pick,	....	....	....	....	19,000
M. Bracken Coal Co.									
Black Diamond,	Drift,	B or Miller,	Mules,	Pick,	....	....	....	....	16,950
D. Laughman.									
Dysert,	Drift,	B or Miller,	Rope and mules,	Pick,	....	....	....	....	59,133
Ferndale Coal Co.									
Ferndale,	Drift,	E or Lemon,	Mules,	Pick,	....	....	....	....	2,000
Whitney, Kemmer & Holts.									
Federal,	Drift,	B or Miller,	Mules,	Pick,	....	....	....	....	48,000
Balzel Coal Co.									
Ivy Ridge,	Drift,	E or Lemon,	Electric Motor,	Machine,	Electricity,	Link Belt and Morgan Gardner.	2 1	31,400	....
Lorain Steel Co.									
Ingleside,	Drift,	B or Miller,	Mules,	Pick,	....	....	....	....	20,684
Merchant Coal Co.									
Jenners Nos. 1 and 2,	Slope,	C prime,	Rope and mules,	Machines,	Compressed air,	....	....	1,000	....
Listie Mining and Man'g. Co.									
Krebs,	Drift,	C prime,	Electric motor,	Machine and pick.	Electricity,	Morgan Gardner.	5	77,290	121,400

Names of Collieries and Operators.	Kind of opening.	Seam of coal worked.	Haulage.	Pick or machine.	Motive power.	Type of machine.	Number used.	Coal mined by machines.	Coal mined by picks.
Lloydell Coal Co.									
Lloydell,	Drift,	B or Miller,	Mules,	Pick,					45,705
Logan Coal Co.									
Logan,	Slope,	B or Miller,	Rope and mules,	Pick,					57,491
Lilly Coal Co.									
Lilly slope,	Drift,	B or Miller,	Mules,	Pick,					63,906
Wilson Creek Coal Co.									
Lone Tree,	Drift,	A or 6 foot,	Mules,	Pick,					39,281
Llewellyn & Yeagley.									
Llewellyn,	Drift,	C prime,	Mules,	Pick,					5,890
Moshannon Coal Co.									
Moshannon,	Slope,	E or Lemon,	Rope and mules,	Pick,					16,797
Murdock Brothers.									
Milford shaft,	Shaft,	A or 6 foot,	Mules,	Pick,					5,223
Reading Coal and Iron Co.									
Mostoller No. 1,	Slope,	C prime,	Electric motor,	Machines,	Compressed air,	Harrison	12	61,687	
Mostoller No. 2,	Slope,	D or Moshannon.	Electric motor,	Machine,					
Penn. Bit. Coal Co.									
Portage slope,	Slope,	B or Miller,	Rope and mules,	Pick.					49,750
Priscilla Coal Co.									
Priscilla,	Drift,	B or Miller,	Mule,	Pick,					33,849
J. W. Metzer.									
Plain,	Drift,	E or Lemon,	Mule,	Pick,					18,258

Stineman Brothers. Stineman No. 1, ...	Slope & drift,	B or Miller,	Rope & electric motor.	Pick, ...	....	....	....	....	280,816
Stineman Coal Co. Stineman No. 2, ...	Drift, ...	B or Miller	Electric motor, ..	Pick, ...	....	....	....	....	170,952
South Fork Coal Co. South Fork, ...	Slope, ...	B or Miller,	Mules, ...	Pick, ...	....	....	....	....	133,000
Standard Coal Co., Ltd. Standard, ...	Drift, ...	B or Miller,	Mules, ...	Pick, ...	....	....	....	....	44,496
Steward Coal Mining Co. Steward, ...	Drift, ...	B or Miller,	Electric motor, ..	Machines, ...	Compressed air,	....	....	22,433	....
Robinson & Irwin. St. Clair, ...	Drift, ...	B or Miller,	Mules, ...	Pick, ...	....	....	....	....	23,220
Shamrock Coal Co. Shamrock, ...	Drift, ...	B or Miller,	Mules, ...	Machines, ...	Compressed air,	Ingersoll, Sullivan and Harrison.	1 each,	10,000	5,000
Shoemaker Coal Co. Sonman drift, ...	Drift, ...	E or Lemon,	Mules, ...	Pick, ...	....	....	....	....	17,688
Wells Creek Coal Co. Wells Creek, ...	Drift, ...	C prime, ...	Mules, ...	Pick, ...	....	....	....	....	40,200
Sonman Shaft Coal Co. Sonman shaft No. 2, ...	Shaft, ...	B or Miller,	Electric motor, ..	Pick, ...	....	....	....	....	53,871
Somerset Mining Co. Lewis, ...	Drift, ...	B or Miller,	Mules, ...	Pick, ...	....	....	....	....	2,573
Henrietta Coal Mining Co. Henrietta shaft Nos. 1 and 2, ..	....	....	....	....	....	....	....	....	180,221
							Total,	3,383,619	3,465,335

Names of Collieries and Operators.	Method of ventilation.	Size of fan or furnace—feet.	Type of fan.	Capacity in cubic feet per minute.	Number of Splits and Quantity in Each Split.								Cubic feet of air per minute for each person in the mine.
					One.	Two.	Three.	Four.	Five.	Six.	Seven.	Eight.	
Berwind White C. M. Co.													
Eureka No. 30,	Fan,	12½x10	Capel,	91,000	7,000	12,000	6,000	11,000	18,000	14,000	10,000	7,000	232
Eureka No. 31,	2 fans,	12x1½	Stine,	72,000	7,000	8,000	10,000	9,000	8,000	18,000	5,000	....	180
Eureka No. 32,	Fan,	11x6½	Capel,	75,000	6,000	7,000	12,000	14.000	9,000	11,400	6,000	....	271
Eureka No. 33,	Fan,	11x4 1-3	Capel,	81,000	14,000	8,000	10,000	9,000	18,000	15,000	....	....	316
Eureka No. 34,	Fan,	12½x5	Capel,	70,000	8,000	12,000	20,000	7,000	10,000	6,000	6,000	....	190
Eureka No. 35,	Fan,	16x6	Capel,	94,000	8,000	10,000	20,000	18,000	16,000	16,000	....	....	213
Eureka No. 36,	Fan,	7x1½	Stine,	45,000	5,000	11,400	7,000	4,500	12,000	3,200	....	....	133
Eureka No. 37,	Fan,	16x6	Capel,	80,000	8,000	15,000	18,000	20,000	12,000	....	....	....	347
Eureka No. 38,	....	....	....	....	....	....	....	....	....	....	....	....	....
Eureka No. 39,	....	....	....	....	....	....	....	....	....	....	....	....	....
Yellow Run shaft,	Fan,	16x5	Brazil Guibal,	74,000	7,000	18,000	15,000	15,500	15,500	....	....	....	243
Webster Coal and Coke Co.													
Webster No. 1,	Fan,	7x1½	Stine,	26,000	8,000	16,000	....	....	....	....	....	....	200
Webster No. 2,	Fan,	9x1½	Stine,	20,000	20,000	....	....	....	....	....	....	....	400
Webster No. 3,	Fan,	....	Capel,	70,000	28,000	16,000	16,000	....	....	....	....	....	300
Webster No. 5,	Fan,	....	Guibal,	52,000	8,000	9,000	14,000	16,000	....	....	....	....	300
Webster No. 6,	Furnace,	6x3½	....	14,000	14,000	....	....	....	....	....	....	....	150
Webster No. 8,	Furnace,	5x4	....	11,000	11,000	....	....	....	....	....	....	....	300
Webster No. 15,	Fan,	9x1½	Stine,	1,000	11,000	....	....	....	....	....	....	....	300
Puritan Coal Mining Co.													
Puritan No. 1,	Fan,	18x6	Guibal,	42,000	18,000	12,000	11,000	....	....	....	....	....	150
Puritan No. 2,	Fan,	12x4	Guibal,	9,000	....	....	....	....	....	....	....	....	240
Puritan No. 3,	Fan,	12x4	Guibal,	14,000	....	....	....	....	....	....	....	....	240
Cambria Steel Co.													
Rolling Mill,	Fan,	16x5	Capel,	123,000	15,000	15,000	12,000	14,000	9,000	21,000	21,000	....	252
Conemaugh slope,	Fan,	12x4	Guibal,	33,000	17,500	15,000	....	....	....	....	....	....	280
Franklin slope,	Fan,	12x4½	Guibal,	20,000	20,000	....	....	....	....	....	....	....	400
Franklin slope No. 1,	Fan,	12x5½	Guibal,	30,000	18,000	12,000	....	....	....	....	....	....	226
Franklin slope No. 2,	....	....	....	....	....	....	....	....	....	....	....	....	....

W. H. Piper & Co.													
Sonman No. 1,	Fan,	12x4	Guibal,	18,000	18,000	......	......	......	......	......	......	......	300
Sonman No. 2,	Fan,	12x4	Guibal,	19,000	10,000	9,000	......	......	......	......	......	......	141
Sonman No. 3,	......	......	......	......	......	......	......	......	......	......	......	......	......
Sonman No. 4,	Furnace,	6x5	......	12,000	12,000	......	......	......	......	......	......	......	240
Coulter & Huff.													
Argyle,	Fan,	8	Capel,	36,900	6,000	12,000	16,000	......	......	......	......	......	223
Conemaugh,	Furnace,	8x4	......	14,000	14,000	......	......	......	......	......	......	......	300
Kokomo,	Furnace,	6x4	......	5,000	5,000	......	......	......	......	......	......	......	205
George Pierce & Sons.													
Calwell,	Furnace,	5x4	......	5,000	5,000	......	......	......	......	......	......	......	128
Excelsior,	Fan,	12x4	Brazil or Guibal,	8,000	8,000	......	......	......	......	......	......	......	700
A. J. Haws & Sons, Limited.													
Haws shaft,	Fan,	12x4	Guibal,	15,000	15,000	......	......	......	......	......	......	......	250
Coopersdale,	Natural,	......	......	4,000	4,000	......	......	......	......	......	......	......	133
Loyalhanna Coal and Coke Co.													
Sonman shaft No. 1,	Fan,	18x5½	Guibal,	76,000	21,000	20,000	24,000	8,000	......	......	......	......	360
Loyalhanna No. 3,	Furnace,	7x5½	......	16,000	16,000	......	......	......	......	......	......	......	210
A. F. Clark & Co.													
Stony Creek,	Fan,	10x3½	Guibal,	24,000	9,000	14,000	......	......	......	......	......	......	400
Somerset,	Furnace,	6x4½	......	6,000	......	......	......	......	......	......	......	......	300
Geo. B. Newton & Co.													
Hopfer,	Furnace,	6x4½	......	6,000	6,000	......	......	......	......	......	......	......	140
Plane,	Furnace,	5½x3½	......	5,000	......	......	......	......	......	......	......	......	300
Henrietta Coal Co.													
Henrietta No. 1,	Fan,	20x5	Guibal,	31,000	15,000	6,000	9,000	......	......	......	......	......	200
Henrietta No. 2,	Fan,	9x1½	Stine,	9,000	9,000	......	......	......	......	......	......	......	300
C. A. Buch.													
Alton,	Fan,	7x1½	Stine,	22,000	8,000	12,000	......	......	......	......	......	......	215
S. Hamilton Coal Co.													
Adams,	Fan,	12x4	Guibal,	22,000	7,500	1,300	......	......	......	......	......	......	400
Cambria Coal Mining Co.													
Anchor,	Furnace,	7x3	......	12,000	12,000	......	......	......	......	......	......	......	200
D. Laughman and J. Leahy.													
Bear Rock,	Furnace,	5x3	......	5,200	5,200	......	......	......	......	......	......	......	110
Bando Coal Co.													
Bando,	Furnace,	5x3	......	5,000	5,000	......	......	......	......	......	......	......	250
Bethel Coal Co.													
Bethel,	Furnace,	4½x3	......	3,800	3,800	......	......	......	......	......	......	......	200

Names of Collieries and Operators.	Method of ventilation.	Size of fan or furnace—feet.	Type of fan.	Capacity in cubic feet per minute.	Number of Splits and Quantity in Each Split.								Cubic feet of air per minute for each person in the mine.
					One.	Two.	Three.	Four.	Five.	Six.	Seven.	Eight.	
M. Backen Coal Co. Black Diamond, ...	Fan, ...	10x3½	Guibal, ...	18,000	18,000	....	....	....	....	....	....	....	400
D. Laughman. Dysert, ...	Fan, ...	7x1½	Stine, ...	15,000	15,000	....	....	....	....	....	....	....	214
Ferndale Coal Co. Ferndale, ...	Natural, ...	....	....	4,000	4,000	....	....	....	....	....	....	....	350
Whitney, Kemmer and Holts. Federal, ...	Furnace, ..	6x4	....	12,000	12,000	....	....	....	....	....	....	....	200
Balzel Coal Co. Ivy Ridge, ...	Fan, ...	10x3½	Guibal, ...	21,000	21,000	....	....	....	....	....	....	....	360
Lorain Steel Co. Ingleside, ...	Furnace, ..	5x3½	....	4,000	4,000	....	....	....	....	....	....	....	160
Merchants Coal Co. Jenners Nos. 1 and 2, ...	....	....	....	....	....	....	....	....	....	....	....	....	....
Lisle Mining and Manfg. Co. Krebs, ...	Fan, ...	12x4	Guibal, ...	70,000	10,000	25,000	31,000	....	....	....	....	....	400
Lloydell Coal Co. Lloydell, ...	Furnace, ..	9x4½	....	14,000	14,000	....	....	....	....	....	....	....	160
Logan Coal Co. Logan, ...	Fan, ...	9x1½	Stine, ...	13,000	13,000	....	....	....	....	....	....	....	200
Lilly Coal Co. Lilly slope, ...	Fan, ...	12x4	Guibal, ...	16,000	65,000	8,500	....	....	....	....	....	....	137
Wilson Creek Coal Co. Lone Tree, ...	Fan, ...	12x4	Guibal, ...	20,000	20,000	....	....	....	....	....	....	....	500

Llewellyn and Yeagley, Llewellyn,	Natural,			8,000	8,000								126
Moshannon Coal Co., Moshannon,	Steam jet,			6,000	6,000								113
Murdock Brothers, Milford shaft,	Fan,	12x4	Outlet,	10,000	10,000								400
Reading Coal and Iron Co., Mosteller No. 1,	Fan,	15x4½	Outlet,	44,000	33,000	11,000							350
Mosteller No. 2,													
Penn. Bituminous Coal Co., Portage slope,	Fan,	10x3½	Outlet,	21,000	12,000	9,500							200
Priscilla Coal Co., Priscilla,	Furnace,	9x4		10,000	10,000								170
J. W. Moser, Plain,	Furnace,	5x3½		6,000	6,000								150
Stineman Brothers, Stineman No. 1,	Fan,	16x5	Outlet,	60,000	6,000	13,000	10,000	15,000	12,000				150
Stineman Coal Co., Stineman No. 2,	2 fans,	7x1½	Blind,	25,000	9,000	10,000	6,000						100
South Fork Coal Co., South Fork,	Fan,	16x5	Outlet,	45,000	18,000	10,000	13,000						230
Standard Coal Co., Ltd., Standard,	Fan,	12x4	Outlet,	8,000	8,000								117
Steward Coal Mining Co., Steward,	Fan,	16x8	Capel,	30,000	30,000								750
Robinson & Irwin, St. Clair,	Furnace,	5x3		7,000	7,000								318
Shamrock Coal Co., Shamrock,	Furnace,	4½x4		7,000	7,000								160
Shoemaker Coal Co., Sonman drift,	Furnace,	5x3		6,000	6,000								100
Wells Creek Coal Co., Wells Creek,	Fan,	10x3½	Outlet,	23,000	23,000								300
Sonman Shaft Coal Co., Sonman shaft No. 2,	Fan,	16x5	Outlet,	55,000	22,000	14,000	20,000						400
Somerset Mining Co., Lewis mine,	Fan,	12x4	Outlet,	20,000	20,000								400

Names of Those to Whom Certificates of Qualification Were Granted in the Sixth Bituminous District for the Following Years.

1893,	F. G. Harvey,	First grade.
1893,	Eleazer Higgins,	First grade.
1893,	James Highams,	First grade.
1893,	Joseph Easton,	First grade.
1893,	Robt. Gilmore,	First grade.
1893,	L. M. Walker,	First grade.
1893,	Thos. Williams,	First grade.
1893,	John Reed,	First grade.
1893,	David T. Edwards,	First grade.
1893,	Chas. Croker,	First grade.
1893,	L. V. Shoff,	Second grade.
1893,	John Good,	Second grade.
1893,	Andrew Lees,	Second grade.
1893,	Jos. Appleyard,	Second grade.
1893,	John Hunter,	Second grade.
1893,	Wm. F. Moss,	Second grade.
1893,	Alfred Slater,	Second grade.
1893,	Wm. Hahn,	Second grade.
1893,	Wm. Dick,	Second grade.
1893,	Thos. Forsyth,	Second grade.
1893,	K. Anthony,	Second grade.
1893,	James Nelson,	Second grade.
1893,	Henry Gage,	Second grade.
1893,	John Thomas,	Second grade.
1893,	James Nicholson,	Second grade.
1893,	James Campbell,	Second grade.
1893,	Sam'l Brewer,	Second grade.
1893,	Edward Nicholson,	Second grade.
1893,	George Blewitt,	Second grade.
1893,	Geo. Simmons,	Second grade.
1893,	Robt. Pierce,	Second grade.
1893,	Edward Kelley,	Second grade.
1893,	Elijah Brubaker,	Second grade.
1893,	Wm. Oldfield,	Second grade.
1893,	R. F. Nichols,	Second grade.
1893,	R. T. Pratt,	Second grade.
1893,	Alex. McDowell.	Second grade.
1893,	Edward McColville.	Second grade.
1893,	Daniel Dempsey,	Second grade.
1893,	Sydney Clemence,	Second grade.
1893,	Smith Hawxley,	Second grade.
1893,	Robt. McCann,	Second grade.
18 3,	W. E. Schwartzendrover,	Second grade
1893,	Chas. Davis,	Second grade.
1893,	Walter Ellis,	Second grade.
1893,	Dan'l Mulholland,	Second grade.
1893,	Wm. Leadbeater,	Second grade.
1893,	Chas. Autey,	Second grade.
1893,	James Bowers,	Second grade.
1893,	J. W. Cole,	Second grade.
1893,	Arthur Camaval,	Second grade.
1893,	Evan D. Davis,	Second grade.
1893,	Timothy Harding,	Second grade.
1893,	James Logan,	Second grade.
1893,	David Watkins,	Second grade.
1893,	Wm. Stubs,	Second grade.
1900,	Adolph Cook,	First grade.
1900,	Robert Virgin,	First grade.
1900,	James Robertson,	First grade.
1900,	James Forsyth,	Second grade.
1900,	Jonathan Nicholson,	Second grade.
1900,	Jonathan Andrews,	Second grade.
1900,	J. W. Ross,	Second grade.
1900,	W. H. Blackburn.	Second grade.
1901,	Peter Welsh,	First grade.
1901,	Talmage Bloss.	First grade.
1901,	Daniel McMulchen,	First grade.
1901,	James Callaghan,	First grade.
1901,	W. J. Eustis,	First grade.
1901,	John Retalick,	First grade.
1901,	John W. Harrison,	First grade.
1901.	Wm. Benson,	First grade.
1901,	Geo. T. Robinson,	First grade.
1901,	Wm. Marron,	Second grade.
1901,	John Godfrey,	Second grade.
1901,	Wm. Doubt,	Second grade.
1901,	John Brown,	Second grade.
1901,	Chas. Jones,	Second grade.
1901,	Chas. Maher,	Second grade.
1901,	Thos. J. Pierce,	Second grade.
1901,	John Jones,	Second grade.
1901,	John Lloyd,	Second grade.
1901,	John McCormick,	Second grade.
1901,	John Evans,	Second grade.
1901,	James Keenan,	Second grade.
1901,	Wm. Morgan.	Second grade.
1901,	James Appleyard,	Second grade.

Accidents.

The number of fatal accidents was reduced last year between one and two per cent. from the number of the year before, and the reduction would have been much greater had it not been for the unusual number of mishaps due, directly or indirectly, to mining machinery. It was hoped that this class of accidents would decrease as the employes become better acquainted with the machines, but it is found that most of those fatally injured in this manner, were new men, who lacked the experience which should teach them where to look for and how to guard against the perils of their occupation. Three were Austrians, two Poles, one a Norwegian, and one a Slav, these constituting thirty-eight per cent of the deaths caused by machinery. Of the eighteen fatal accidents, over fifty per cent. could have been averted by the exercise of ordinary care and good judgment, even in the absence of full experience and knowledge of danger.

I feel that too much credit cannot be given to the mine foremen and superintendents for the efforts they have put forth to reduce the number of accidents in and about the collieries in their charge. It cannot be denied that their task has been rendered more difficult by modern methods of mining, in which machinery plays so large a part, and by the constant accession of new men to the forces under their charge who are almost, if not totally ignorant of the dangers in coal mines. Much assistance can be rendered the officials in preventing accidents..on the one hand by the operators, in safeguarding to a still greater degree the mechanical appliances, and on the other by the employes, in exercising care when working about these appliances, and in every department of their hazardous occupation.

General Condition of Mines.

The sanitary condition of the mines throughout the district is fairly good. Efforts have been made to put in good ventilating apparatus, and the table in this report shows that a much larger volume of air is forced into the mines than is required by law. This, however, is in many cases no assurance that the operations are well ventilated, as I find that the greatest difficulty is in getting the air properly distributed and conducted to the face of the workings. If that part of the work were always well attended to, the total volume might be considerably less, while the condition of the mines would be better as to healthfulness. The chief trouble in the distribution of air is due to small airways and poorly made stoppings along the main roadways. These are often made of slate walls, packed between with dirt from the roads, or boarded up, in the belief that they will prevent the leakage of air, but this is a mistake, as such stoppings are not sufficient, particularly where fans are used. Nothing else than a brick, stone or slate stopping, well mortared, will prevent leakage between intake and return airways. Mines where the coal seams are low, as they are in this district, require to be equipped with fans that can throw off air against pressures ranging from one to three inches of water gauge, depending upon the size and the area over which the mine is worked; for low seams mean small airways, except at a heavy expense in blowing down roof. A little foresight in many cases would prevent this outlay, and increase the area of the air channels without any additional expense, by having at least the first two rooms on each cross heading, which is usually driven parallel with the main heading and airway, kept open in reserve for future use for the passage of air when the mine becomes extensive. This would give an area from three to four times the original size which would reduce the friction and thus enable the ventilators to throw off a larger volume of air, as the pressure would be less at the fan.

The distribution of air and the conducting of it in sufficient volume to the face of the working, lies mostly in charge of the mine foreman. To accomplish this, he should have air-tight stoppings put in, as has already been suggested, especially along the main air-ways between intake and return, and if this is done as the work advances, it is not expensive. But if poor stoppings are put in they answer fairly well for a little time, but as the mine becomes extensive and it is found there is not sufficient air at the face of the working, then comes the real expense. All the old stoppings must be replaced by brick or stone, laid in motar. Costly as this is, I have been compelled to have it done in several mines, and there are others where the same course must be followed, as the volume of air reaching the face of the workings is not adequate, especially when it has to be divided into two or more splits, each requiring a certain velocity before it will carry away the foul gasses given off at the face of the working, and replace it with pure air.

Though a number of good ventilators are being put in throughout the district, yet the trouble in some of the old mines has not been overcome, and it not difficult to see why. They have but a single channel, and generally a small one to carry the total volume of air into the mine. This may be a mile or more in length, and if at its termination the mine branches out into two or three sections of work, possibly larger than the original, it will require more air, and consequently greater pressure, than was the case at first. It is apparent that in such a case the best of fans cannot give relief. Considering the question of cost, the most practicable remedy in such a situation is to sink a shaft at or near the face of the mine if the depth is not too great, as the expense of enlarging an old airway for a mile or more and keeping up the stoppings along it would be enormous. This has been found necessary in several of the mines, and a few more will be required to apply the same remedy-reducing by half, the distance which the air has to travel, by sinking a shaft at the face of the working and providing a double airway into or out of the mine.

Haulage and Drainage.

The question of haulage is now properly receiving a great deal of attention from the mine operators of the district, and the result, is the driving of large, roomy headings, the laying of good roads, and better drainage of the same, all of which are desirable from the viewpoint of economy, as well as that of safety. No mine is safe with small, narrow headings and roads; neither does it pay to have them, calculating by dollars and cents. This view of the subject is more general than ever before, and wherever it has been carried into effect I find little water or mud on the haulways in the mines, but dry and well-ballasted roads, with a generous space on each side of the track over which the coal must be hauled, whether by mule or mechanical power.

It must not be understood, of course, that everybody has been converted. The surprising tenacity with which people will cling to an antiquated method of doing things, is illustrated by the way some mining men still drive headings over which coal has to be drawn out. For the sixteen years that the present Inspector has served in this district he has been steadily hammering away in an attempt to show the benefit to be derived from large headings, both for ventilation and the economical hauling of coal. Nevertheless there are those who cannot or will not be convinced, but continue with the small, low headings, at the expense of poor ventilation, increased danger to drivers, and less coal hauled for the same cost. It is purely a case of saving at the spigot and wasting at the bung, as a few moments of calculation will show. A heading that is contracted, particularly in height, allows the use of only a small mule, which quite naturally can haul only a small load, although it costs just as much to hire a man to drive him as to hire a driver for a heavier animal that could haul at least half as much more. Computation will show that at the lowest estimate there is a saving of five-tenths of a cent per ton on coal hauled through a large, roomy heading, as compared with that taken out along a heading that is small and low; to say nothing of the numerous other advantages gained. Such being the case, it seems strange that there should be any necessity for complaining of this particular defect. But, as before remarked, the signs are encouraging. The up-to-date men, who are fast taking the places of the fogies in this, as in every other department of the world's activities, are quick to note which is the better way, and just as prompt to adopt it.

There can be no change made that will so greatly aid in reducing the number of accidents as the one here referred to, and its influence in improving the ventilation is equally apparent. In a roomy heading the wagons do not fill such a large proportion of the space and so retard the passage of the air, as in a small one. Better drainage is another result of the wider passage way, which give sufficient space to carry the water off the middle of the road and conduct it alongside the tracks, and altogether off the hauling road. The latter plan, of course, is the better one, and it is being adopted at most of the mines, thus enabling me to report improved drainage throughout the district.

Report on Mines by Groups.

The Sixth District now has about eighty mines, located as follows:

Seventeen are on the Somerset and Cambria branch of the Baltimore and Ohio Railroad, between Johnstown and Rockwood. The sanitary condition of all these mines is good. Eleven are ventilated by fans; the remaining six by furnaces, which are adequate for the work, as they are small operations. The largest is the Federal, located at Hooversville, and very favorably situated for furnace ventilation, as it runs along the side of a bluff and can open up to the surface without any expense, thus bringing the air into the mine at the face of the workings. The operators propose to put in a fan in the spring. Three other mines are being opened up on this road, one by the Reading Coal and Iron Company at Friedens, and the other two by the Merchants' Coal Company near Jenners, Somerset county. The new town of Boswell is located at these latter mines, and is being rapidly built up. This promises to be a very large operation. The mines are opened by driving a slope down on the pitch of the seam. Several headings are already cut through, the coal being stocked outside ready for shipment as soon as the branch railroad to the mine is completed. The distance from the main line of the Baltimore and Ohio is thirteen miles.

Ten mines are located in and about Johnstown, some of them are small, but all are well ventilated and drained, and consequently are in good sanitary condition. Five are operated by the Cambria Steel Company, all of which are equipped with the best kind of ventilators. The safety of the mines at this point can be judged by the fact that over 1,000,000 tons of coal were produced during 1901, and but one fatal accident occurred, that being in the Rolling Mill mine, the largest single operation in the district, which produced over 601,000 tons during the year.

Of the thirty-five mines scattered along the main line of the Pennsylvania Railroad between Johnstown and Cresson, the first, going eastward, is the Black Diamond, located at Mineral Point. It is a small operation, employing about thirty-eight men, but is well ventilated by a fan, and the air is evenly distributed.

The next group of mines includes those at South Fork and Ehrenfeld, all but three of which are ventilated by fans, the Priscilla, and Webster Nos. 6 and 8, but the latter two will be equipped with them in the spring. The South Fork colliery has had a fan twelve feet in diameter, replaced by a twenty-foot one, which has put this mine in very satisfactory condition as regards ventilation. Stineman Nos. 1 and 2 are in need of better ventilating power. Both are supplied by fans, the latter by two small ones, the other by a single one, which is inadequate for the work, as this is in fact a double mine and covers a very large area. There is consequently required here for proper ventilation either a larger fan or an opening at the face of the workings. The two small fans at No. 2 should also be replaced by a large one in order to keep the mines in a healthful condition.

At Puritan, on a branch road from Portage, are located twelve collieries, several of them being small operations, four of which were idle the greater part of the past year. The remaining eight were worked more or less steadily during that time. All but two are ventilated by fans, and furnaces suffice to air those two fairly well, as neither employs over thirty-five men. The Portage slope has been somewhat defective in its ventilation for the double reason that the fan was too small for the work, and its efficiency was partly destroyed by a line of steam and water pipes carried through the return airway. Both causes have now been removed, the pipes having been taken out and a larger fan put in. At Puritan No. 1, one of the most extensive mines located here, a large fan was put in to replace a smaller one, but still this did not sufficiently increase the ventilation, because of the small airway from the fan to the face of the workings. This was remedied by cutting a new and larger airway about one mile long, and the ventilation is now quite satisfactory.

The next group of mines is at Sonman and Bens Creek. At the former place are Sonman shaft No. 2 and Sonman drift. At the latter a 15-foot fan is being installed to replace a furnace; the former is now ventilated by a 15-foot fan, which gives excellent results. On Bens Creek there are six mines, all ventilated by furnaces except one small operation. The fan at Webster No. 1 is inadequate for the work, and to assist it, a shaft is to be put down at the extreme face of the mine, which will overcome the trouble and put the colliery in excellent condition. The other mines here are in good condition; two of them will be about worked out during 1902. At a mine between Bens Creek and Lilly, operated by the Moshannon Coal Company, a partially successful attempt has been made to ventilate with the heat from the steam line running down to the pumps. This plan works fairly well in extremely cold weather, but when that is over, its efficacy is gone and a fan will be installed at this mine in the spring.

At Lilly there are six mines, three of which are ventilated by fans and three by furnaces, and, the latter being comparatively small, this method gives fairly good results when the furnaces are kept properly fired up. At one of the three ventilated by fans it has been found necessary to put down a shaft at the face of the workings in order to get air to that point. The other two are in about the same condition, needing more ventilating power than is in the present fan, as the mines are becoming extensive and cover a large area.

The other mines in the district are located on the South Fork branch. Four are at Lloydell, all ventilated by fans except the Lloydell mine, which has a furnace, a very large one, however, and one which will give all the air required if kept properly fired up. The sanitary condition of all these collieries is quite satisfactory. At Dunlo there are four operations, the sanitary condition of all being good, with fan ventilation in each. At the Henrietta colliery a new fan twenty feet in diameter has been installed over a shaft which has been sunk to the face of the slope. The other mines on this branch are located at Windber and Foustwell. All of these are opened up and operated on the same plan with double tracks all through the main headings, and ventilated on the split system, giving fresh air for each heading. All but one are equipped with Capell fans ranging from twelve to sixteen feet in diameter. The ventilation and drainage are very satisfactory.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Sixth Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Berwind White C. M. Co.						
Eureka No. 30,	Somerset,	Thos. Fischer,	Philadelphia,	J. S. Cunningham,	Windber,	Penna. Railroad.
Eureka No. 31,	Somerset,	Thos. Fischer,	Philadelphia,	J. S. Cunningham,	Windber,	Penna. Railroad.
Eureka No. 32,	Somerset,	Thos. Fischer,	Philadelphia,	J. S. Cunningham,	Windber,	Penna. Railroad.
Eureka No. 33,	Somerset,	Thos. Fischer,	Philadelphia,	J. S. Cunningham,	Windber,	Penna. Railroad.
Eureka No. 34,	Somerset,	Thos. Fischer,	Philadelphia,	J. S. Cunningham,	Windber,	Penna. Railroad.
Eureka No. 35,	Somerset,	Thos. Fischer,	Philadelphia,	J. S. Cunningham,	Windber,	Penna. Railroad.
Eureka No. 36,	Somerset,	Thos. Fischer,	Philadelphia,	J. S. Cunningham,	Windber,	Penna. Railroad.
Eureka No. 37,	Cambria,	Thos. Fischer,	Philadelphia,	J. S. Cunningham,	Windber,	Penna. Railroad.
Eureka No. 38,	Somerset,	Thos. Fischer,	Philadelphia,	J. S. Cunningham,	Windber,	Penna. Railroad.
Eureka No. 39,	Somerset,	Thos. Fischer,	Philadelphia,	J. S. Cunningham,	Windber,	Penna. Railroad.
Yellow Run shaft,	Cambria,	Thos. Fischer,	Philadelphia,	A. S. R. Richards,	Osceola Mills,	Penna. Railroad.
Webster Coal and Coke Co.						
Webster No. 1,	Cambria,	John H. Tonkin,	Gallitzin,	Jas. L. Nicholson,	Ehrenfeld,	Penna. Railroad.
Webster No. 2,	Cambria,	John H. Tonkin,	Gallitzin,	Jas. L. Nicholson,		Penna. Railroad.
Webster No. 3,	Cambria,	John H. Tonkin,	Gallitzin,	Jas. L. Nicholson,		Penna. Railroad.
Webster No. 5,	Cambria,	John H. Tonkin,	Gallitzin,	Jas. L. Nicholson,		Penna. Railroad.
Webster No. 6,	Cambria,	John H. Tonkin,	Gallitzin,	Wm. C. Shiffer,	Gallitzin,	Penna. Railroad.
Webster No. 8,	Cambria,	John H. Tonkin,	Gallitzin,	Wm. C. Shiffer,		Penna. Railroad.
Webster No. 15,	Cambria,	John H. Tonkin,	Gallitzin,	Wm. C. Shiffer,		Penna. Railroad.
Puritan Coal Mining Co.						
Puritan No. 1,	Cambria,			P. F. Campbell,	Puritan,	Penna. Railroad.
Puritan No. 2,	Cambria,			P. F. Campbell,		Penna. Railroad.
Puritan No. 3,	Cambria,			P. F. Campbell,		Penna. Railroad.
Cambria Steel Co.						
Rolling Mill,	Cambria,	M. G. Moore,	Johnstown,	G. F. Robinson,	Johnstown,	Penna. Railroad.
Conemaugh slope,	Cambria,	M. G. Moore,	Johnstown,	G. F. Robinson,	Johnstown,	Penna. Railroad.
Franklin slope,	Cambria,	M. G. Moore,	Johnstown,	G. F. Robinson,	Johnstown,	Penna. Railroad.
Franklin No. 1,	Cambria,	M. G. Moore,	Johnstown,	G. F. Robinson,	Johnstown,	Penna. Railroad.
Franklin No. 2,	Cambria,	M. G. Moore,	Johnstown,	G. F. Robinson,	Johnstown,	Penna. Railroad.
W. H. Piper & Co.						
Sonman No. 1,	Cambria,	A. H. Slayman,	Altoona,	Geo. Forsyth,	Lilly,	Penna. Railroad.
Sonman No. 2,	Cambria,	A. H. Slayman,	Altoona,	Geo. Forsyth,	Lilly,	Penna. Railroad.
Sonman No. 3,	Cambria,	A. H. Slayman,	Altoona,	Geo. Forsyth,	Lilly,	Penna. Railroad.
Sonman No. 4,	Cambria,	A. H. Slayman,	Altoona,	Geo. Forsyth,	Lilly,	Penna. Railroad.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Coulter & Huff.						
Argyle,	Cambria,	J. P. Wilson,	South Fork,	J. P. Wilson,	South Fork,	Penna. Railroad.
Conemaugh,	Cambria,	J. P. Wilson,	South Fork,	J. P. Wilson,	South Fork,	Penna. Railroad.
Kokomo,	Cambria,	J. P. Wilson,	South Fork,	J. P. Wilson,	South Fork,	Penna. Railroad.
George Pierce & Sons.						
Calwell,	Cambria,			Robt. Pierce,	Puritan,	Penna. Railroad.
Excelsior,	Cambria,			Robt. Pierce,	Puritan,	Penna. Railroad.
A. J. Haws & Sons, Ltd.						
Haws shaft,	Cambria,	Wm. Oppy,	Johnstown,	Wm. Oppy,	Johnstown,	Penna. Railroad.
Coopersdale,	Cambria,		Johnstown,	Wm. Oppy,	Johnstown,	Penna. Railroad.
Loyal Hanna Coal & Coke Co.						
Sonman shaft No. 1,	Cambria,			J. L. S. Patterson,	Onnalinda,	Penna. Railroad.
Loyal Hanna No. 3,	Cambria,			J. L. S. Patterson,	Onnolinda,	Penna. Railroad.
Henrietta Coal Mining Co.						
Henrietta shaft No. 1,	Cambria,			Jas. Campbell,	Dunlo,	Penna. Railroad.
Henrietta shaft No. 2,	Cambria,			Jas. Campbell,	Dunlo,	Penna. Railroad.
A. F. Clark & Co.						
Stony Creek,	Somerset,				Hooversville,	B. & O.
Somerset,	Somerset,				Hooversville,	B. & O.
Madeira Coal Co.						
Madeira No. 1,	Cambria,	T. G. Betts,	Clearfield,			Penna. Railroad.
Madeira No. 2,	Cambria,	T. G. Betts,	Clearfield,			Penna. Railroad.
Madeira No. 3,	Cambria,	T. G. Betts,	Clearfield,			Penna. Railroad.
C. A. Buch.						
Alton,	Cambria,	C. A. Buch,	Altoona,	D. J. Mulhollen,	Lloydell,	Penna. Railroad.
S. Hamilton Coal Co.						
Adams,	Somerset,	A. C. Adams,	847 Baltimore, Md.,	P. M. Connor,	Listie,	B. & O.
Cambria Coal Mining Co.						
Anchor,	Cambria,	Andy Barna,	Puritan,	Andy Barna,	Puritan,	Penna. Railroad.
D. Laughman and J. Leahy.						
Bear Rock,	Cambria,			Patrick Leahy,	Lilly,	Penna. Railroad.

Bando Coal Co. Bando,	Somerset,	Thos. M. Righter,	Mt. Carmel,	G. W. Gehres,	Milfred Station.	B. & O.
Bethel Coal Co. Bethel,	Somerset,			A. G. White,	Hollsopple,	B. & O.
M. Bracken Coal Co. Black Diamond,	Cambria,	J. H. Bracken,	Johnstown,			
D. Laughman. Dysert,	Cambria,			Thos. Leahey,	Lilly,	Penna. Railroad.
Ferndale Coal Co. Ferndale,	Cambria,	Geo. K. Schryock,	Johnstown,			B. & O.
Whitney, Kemmer & Holts. Federal,	Somerset,	Edw. W. Holt,	Hooversville,	E. W. Holt,	Hooversville,	B. & O.
Baltzell Coal Co. Ivy Ridge,	Cambria,	Chas. Baltzell,	Altoona,	Jos. Higham,	Portage,	Penna. Railroad.
Lorain Steel Co. Ingleside,	Cambria,	P. Lavelle,	Johnstown,	Wm. T. Moss,	Wallasal,	B. & O.
Merchants Coal Co. Jenner Nos. 1 & 2,	Somerset,	W. H. Morris,	Johnstown,	Enoch James,	Johnstown,	B. & O.
Listie Mining & Manfg. Co. Krebs,	Somerset,	Geo. J. Krebs,	Somerset,	Geo. J. Krebs,	Somerset,	B. & O.
Lloydell Coal Co. Lloydell,	Cambria,	J. Chester Stauffer,	Harrison Building, Phila.,	W. H. Blackburn,	Lloydell,	Penna. Railroad.
Logan Coal Co. Logan slope,	Cambria,	C. F. Fraser,	Altoona,	Wm. H. Booth,	Dunlo,	Penna. Railroad.
Lilly Coal Co. Lilly slope,	Cambria,	Chas A. Hughes,	Altoona,	W. W. Evans,	Lilly,	Penna. Railroad.
Wilson Creek Coal Co. Lone Tree,	Somerset,			F. F. Lyon,	Rockwood,	B. & O.
Llewellyn & Yeagly. Llewellyn,	Cambria,			D. J. Llewellyn,	Johnstown,	B. & O. & P. R. R.
Moshannon Coal Co. Moshannon No. 2,	Cambria,	Thos. Leahy,	Lilly,	Thos. Leahy,	Lilly,	Penna. Railroad.
Murdock Brothers. Milford shaft,	Somerset,	J. M. Murdock,	Johnstown,	Angus Louther,	Somerset,	B. & O.
Reading Coal and Iron Co. Mostellor No. 1,	Somerset,	Geo. Schuhmann,	Reading,	W. H. Druse,	Kimmelton,	B. & O.
Mostellor No. 2,	Somerset.					

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Penn. Bit. Coal Co. Portage slope,	Cambria,	W. L. Hughes,	Portage,			Penna. Railroad.
Priscilla Coal Co. Priscilla,	Cambria,	D. W. Luke,	South Fork,	J. H. Luke,	South Fork,	Penna. Railroad.
J. W. Mentzer. Plain,	Cambria,	J. W. Menzer,	Hollidaysburg,	John A. Leaf,	Lilly,	Penna. Railroad.
Stineman Brothers. Stineman No. 1,	Cambria,	W. I. Stineman,	South Fork,	R. H. Ott,	South Fork,	Penna. Railroad.
Stineman Coal Co. Stineman No. 2,	Cambria,	W. I. Stineman,	South Fork,	Jonathan Andrews,	South Fork,	Penna. Railroad.
South Fork Coal Co. South Fork,	Cambria,	Philip Hartman,	South Fork,	Jos. Callahan,	South Fork,	Penna. Railroad.
Standard Coal Co., Ltd. Standard,	Cambria,	R. J. Hughes,	Altoona,	N. Evans,	Lilly,	Penna. Railroad.
Stewart Coal Mining Co. Stewart,	Somerset,	J. C. Galbreath,	Landstreet.			
Robinson & Irvin. St. Clair,	Cambria,	Robertson & Irwin,	Johnstown,	John Thomas,	Johnstown,	Penna. Railroad.
Shamrock Coal Co. Shamrock,	Somerset,			F. H. Darby,	Shamrock,	B. & O.
Shoemaker Coal Co. Sonman drift,	Cambria,	J. C. Shoemaker,	Sonman,	Hawey Mears,	Portage,	Penna. Railroad.
Sonman Shaft Coal Co. Sonman shaft No. 2,	Cambria,			H. S. Beale,	Sonman,	Penna. Railroad.
Wells Creek Coal Co. Wells Creek,	Somerset,	Fred. C. Keighley,	Uniontown,	John H. Lane,	Friendens,	B. & O.
Somerset Mining Co. Lewis mine,	Somerset,			Talfred Lewis,	Hooversville,	B. & O.

TABLE II—Gives the total number of tons of coal mined and tonsof coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Sixth Bituminous District for the Year ending December 31, 1901.

Names of Operators.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Berwind White C. M. Co.														
Eureka No. 30,	Somerset,	466,126	10,653	36	476,815	....	......	250	434	2	1	1,900	4,775	....
Eureka No. 31,	Somerset,	371,481	6,319	....	377,800	....	......	222	432	......	......	1,510	3,780	....
Eureka No. 32,	Somerset,	294,318	9,885	39	304,242	....	......	202	447	......	1	1,210	3,050	....
Eureka No. 33,	Somerset,	220,574	6,347	....	226,921	....	......	206	280	1	......	950	2,280	....
Eureka No. 34,	Somerset,	304,354	6,315	....	310,669	....	......	204	405	......	......	1,250	3,200	....
Eureka No. 35,	Somerset,	377,818	9,798	931	388,547	....	......	212	474	3	......	1,560	3,990	....
Eureka No. 36,	Somerset,	212,758	3,833	....	216,591	....	......	234	361	1	2	880	2,265	....
Eureka No. 37,	Cambria,	165,311	4,390	....	169,701	....	......	234	253	......	......	1,140	3,160	....
Eureka No. 38,	Somerset,	....	....	....	....	....	......	....	....	......	......	....	....	....
Eureka No. 39,	Somerset,	....	....	....	....	....	......	....	....	......	......	....	....	....
Yellow Run shaft,	Cambria,	186,295	5,595	1,174	193,064	....	......	226.50	319	......	......	638	....	35
Total,	....	2,599,035	63,135	2,180	2,664,350	....	......	221	3,405	7	4	11,038	26,500	35
Webster Coal and Coke Co.														
Webster No. 1,	Cambria,	63,234.03	....	200	63,434.03	....	......	262.3	141	1	2	460	....	12
Webster No. 2,	Cambria,	55,822.15	2,017	....	57,839.15	....	......	231.7	80	......	......	390	225	9
Webster No. 3,	Cambria,	156,121.12	....	....	156,121.12	....	......	221.9	....	1	4	....	....	35
Webster No. 5,	Cambria,	132,094.15	11,136	....	143,230.06	....	......	219.4	544	1	1	1,486	3,273	26
Webster No. 6,	Cambria,	50,712.02	....	....	50,712.02	....	......	218.6	....	......	1	....	....	11
Webster No. 8,	Cambria,	6,990.13	....	980	7,970.13	....	......	218.4	....	......	......	....	....	2
Webster No. 15,	Cambria,	19,838.09	1,450	160	21,448.09	....	......	287.3	50	......	......	175	175	6
Total,	....	484,811.69	14,603	1,340	500,754.60	....	......	270	815	3	8	2,411	3,673	101

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Puritan Coal Mining Co.														
Puritan No. 1,	Cambria,	165,232	2,380	200	167,812	....	......	238	228	......	1	630	....	14
Puritan No. 2,	Cambria,	15,860	....	....	15,860	....	......	134	30	......	......	90	....	5
Puritan No. 3,	Cambria,	43,371	543	362	44,276	....	......	181	68	......	......	180	....	6
Total,		224,463	2,923	562	227,948	....	......	184	326	......	1	900	....	25
Cambria Steel Co.														
Rolling Mill,	Cambria,	588,574	13,076	11	601,661	....	......	299.50	657	1	4	2,720	7,280	77
Conemaugh slope,	Cambria,	129,869	1,861	7	131,737	....	......	267.50	137	1	......	1,229	2,786	12
Franklin slope,	Cambria,	14,047	....	....	14,047	....	......	204	44	......	......	38	1,750	2
Franklin slope No. 1,	Cambria,	126,356	1,503	....	127,859	....	......	264	152	......	1	418	1,615	21
Franklin slope No. 2,	....	....	....	....	....	....	......	......	......	......	......	......	....	......
Total,		858,846	16,440	18	875,304	....	......	259	990	2	5	4,405	1,343	112
W. H. Piper & Co.														
Sonman No. 1,	Cambria,	32,626	900	600	24,126	....	......	166	64	1	......	50	30	7
Sonman No. 2,	Cambria,	110,891	900	900	112,691	....	......	188	184	......	......	185	570	16
Sonman No. 3,	....	....	....	....	....	....	......	......	......	......	......	......	....	......
Sonman No. 4,	Cambria,	24,328	....	8	24,336	....	......	176	44	......	......	40	....	2
Total,		167,845	1,800	1,508	171,153	....	......	177	292	1	......	275	600	25
Coulter & Huff.														
Argyle.	Cambria,	175,422	1,095	696	177,213	....	......	310	189	......	......	1,687	1,550	15
Conemaugh,	Cambria,	40,549	586	659	41,794	....	......	291	50	......	1	395	300	4
Kokomo,	Cambria,	7,722	....	....	7,722	....	......	132	15	1	......	103	....	2
Total,		223,693	1,681	1,355	226,729	....	......	244	254	1	1	2,185	1,850	21

George Pierce & Sons.														
Caldwell,	Cambria,	8,500	......	......	8,500	......	......	148	40	......	......	70	200	2
Excelsior,	Cambria,	6,803	100	72	6,975	......	......	197	12	......	......	60	......	2
Total,	......	15,303	100	72	15,475	......	......	172	52	......	......	130	200	4
A. J. Haws & Sons, Ltd.														
Haws shaft,	Cambria,	......	1,300	......	35,000	......	......	305	54	......	......	200	1,225	7
Coopersdale,	Cambria,	......	8,980	......	8,980	......	......	......	19	......	......	50	......	2
Total,	......	......	10,280	......	43,980	......	......	305	73	......	......	250	1,225	9
Loyalhanna Coal and Coke Co.														
Sonman shaft No. 1,	Cambria,	144,029	4,855	255	149,139	......	......	192	210	1	1	......	......	20
Loyalhanna No. 3,	Cambria,	13,348	96	47	13,491	......	......	183	79	......	1	......	......	9
Total,	......	157,377	4,951	302	162,630	......	......	138	289	1	2	......	......	29
Henrietta Coal Mining Co.														
Henrietta shaft No. 1,	Cambria,	173,805	5,328	1,088	180,221	......	......	277	265	......	3	750	1,500	51
Henrietta shaft No. 2,	Cambria,													
Total,	......	173,805	5,328	1,088	180,221	......	......	277	265	......	3	750	1,500	51
A. F. Clark & Co.														
Stony Creek,	Somerset,	9,222	110	......	9,332	......	......	52	55	......	......	......	......	6
Somerset,	Somerset,	3,471	40	......	3,511	......	......	27	20	......	......	......	......	2
Total,	......	12,693	150	......	12,843	......	......	40	75	......	......	......	......	8
Geo. B. Newton Co.														
Hopfer No. 1,	Cambria,	12,694	......	200	12,894	......	......	80	41	......	......	50	......	8
Plane No. 2,	Cambria,	3,333	......	......	3,333	......	......	43	15	......	......	15	......	1
Plane No. 3,	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Total,	......	16,027	......	200	16,227	......	......	62	56	......	......	65	......	9

Recapitulation.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Berwind White C. M. Co.,	Somerset,	2,599,035	63,136	2,180	2,664,350	....	....	1,910.50	3,405	7	4	11,038	26,500	35
Webster Coal and Coke Co.,	Cambria,	484,811	14,603	1,340	500,754	....	....	1,659.6	815	3	8	2,411	3,673	101
Puritan Coal Mining Co.,	Cambria,	224,463	2,923	562	227,948	....	....	553	326	....	1	900	....	25
Cambria Steel Co.,	Cambria,	858,846	16,440	18	875,304	....	....	1,035	990	2	5	4,405	13,431	112
W. H. Piper & Co.,	Cambria,	167,845	1,800	1,508	171,153	....	....	530	292	1	....	275	600	25
Coulter & Huff,	Cambria,	223,693	1,681	1,355	226,729	....	....	733	254	1	1	2,185	1,850	21
Geo. Pierce & Sons,	Cambria,	15,303	100	72	15,475	....	....	345	52	....	....	130	200	4
A. J. Haws & Sons,	Cambria,	....	10,280	....	43,980	....	....	305	73	....	....	250	1,225	9
Loyalhanna Coal and Coke Co.,	Cambria,	157,377	4,951	302	162,630	....	....	375	189	1	2	....	....	29
Henrietta Coal Mining Co.,	Cambria,	173,805	5,328	1,088	180,221	....	....	277	265	....	3	750	1,500	51
A. F. C. Clark & Co.,	Cambria,	12,693	150	....	12,843	....	....	79	75	....	....	....	....	8
Geo. B. Newton Co.,	Cambria,	16,027	....	200	16,227	....	....	123	56	....	....	65	....	9
C. A. Buch,	Cambria,	62,405	300	350	63,055	....	....	200	107	....	....	....	....	12
S. Hamilton Coal Co.,	Somerset,	32,568	68	271	32,907	....	....	271	58	1	....	600	1,000	7
Cambria Coal Mining Co.,	Cambria,	18,857	....	....	18,857	....	....	125	30	....	....	....	....	8
D. Laughman and J. Leahy,	Cambria,	31,208	....	100	31,308	....	....	240	50	....	....	....	700	....
Bando Coal Co.,	Somerset,	6,206	21	37	6,264	....	....	201	32	....	....	216	221	1
Bethel Coal Co.,	Somerset,	19,000	....	....	19,000	....	....	308	28	1	....	172	400	3
M. Bracken Coal Co.,	Cambria,	16,838	112	....	16,950	....	....	174	47	....	....	90	....	4
D. Laughman,	Cambria,	58,527	221	385	59,133	....	....	221	124	....	....	105	100	16
Ferndale Coal Co.,	Cambria,	2,000	....	....	2,000	....	....	65	17	....	....	10	....	1
Whitney, Kemmer & Holts,	Somerset,	48,000	....	....	48,000	....	....	170	80	....	....	480	....	8
Balzell Coal Co.,	Cambria,	31,000	....	400	31,400	....	10	158	47	....	....	200	....	6
Lorain Steel Co.,	Cambria,	20,636	25	23	20,684	....	....	153.75	28	....	....	132	150	4
Merchants Coal Co.,	Somerset,	....	....	....	1,000	....	....	75	53	....	....	....	....	....
Listie Mining and Manfg. Co.,	Somerset,	197,184	1,080	426	198,690	....	....	204	203	....	1	1,600	15	20
Lloydell Coal Co.,	Cambria,	45,325	....	380	45,705	....	....	224	86	1	2	....	....	11
Logan Coal Co.,	Cambria,	56,388	547	556	57,491	....	....	246	94	....	....	275	....	11
Lilly Coal Co.,	Cambria,	63,491	96	319	63,906	....	....	171	162	....	1	20	100	13
Wilson Creek Coal Co.,	Somerset,	38,766	400	115	39,281	....	....	240	64	....	....	....	....	5
Llewellyn & Yeagley,	Cambria,	5,830	....	60	5,890	....	....	173	19	....	....	33	....	2

Moshanon Coal Co.,	Cambria,	14,981	843	973	16,797			251	53			100	200	2
Murdock Brothers,	Somerset,	5,023	200		5,223			251	35			40	4	2
Reading Coal and Iron Co.,	Somerset,	59,288	1,958	441	61,687			287	152		1	534	7,150	11
Penn. Bit. Coal Co.,	Cambria,	48,000	1,500	250	49,750			128	121		1	240	100	9
Priscilla Coal Co.,	Cambria,	33,449	300	100	33,849			188	60			150	100	10
J. W. Metzer,	Cambria,	18,158	50	50	18,258			144	42			172	25	6
Stineman Brothers,	Cambria,	273,616	7,200		280,816			291.7	409			1,800		27
Stineman Coal Co.,	Cambria,	170,142	810		170,952			267.5	262			1,000		14
South Fork Coal Co.,	Cambria,	130,000	3,000		133,000			233	212			1,600	1,000	13
Standard Coal Co., Limited,	Cambria,	44,496			44,496			224	73			30		9
Steward Coal Mining Co.,	Somerset,	19,863	2,415	161	22,439			249	57			500	700	
Robinson & Irwin,	Cambria,	22,932	38	250	23,220			294	23			115		3
Shamrock Coal Co.,	Somerset,	13,500	1,500		15,000			207	46					2
Shoemaker Coal Co.,	Cambria,	17,654		34	17,688			91.2	71			25	200	4
Wells Creek Coal Co.,	Somerset,	40,000	200		40,200			203	75			150		12
Sonman Shaft Coal Co.,	Cambria,	50,463	2,456	952	53,871			130	125		1			6
Somerset Mining Co.,	Somerset,	2,573			2,573			39	23					
Grand total,		6,686,965	146,731	15,258	6,848,954		10	188.50	10,066	18	31	32,798	61,130	691

TABLE II—Continued.

Names of Operators.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Berwind White C. M. Co.,	Somerset,	....	....	24	6,000	6,000	....	....	42	20	4,310	34	4,550	2,300	15	19
Webster Coal and Coke Co.,	Cambria,	....	....	19	2,550	2,550	....	....	5	9	300	5	2,300	1,400	4	4
Puritan Coal Mining Co.,	Cambria,	....	....	8	680	680	....	....	4	6	725	2	770	550	6	......
Cambria Steel Co.,	Cambria,	7	1,440	7	500	1,940	1	3	....	9	1,575	4	370	300	4	8
W. H. Piper & Co.,	Cambria,	8	420	1	50	470	....	....	....	3	360	1	100	50	......	......
Coulter & Huff,	Cambria,	1	25	3	250	275	....	....	....	....	....	....	....	....	......	......
Geo. Pierce & Sons,	Cambria,	....	....	1	70	70	....	....	....	....	....	....	....	....	......	......
A. J. Haws & Sons,	Cambria,	....	....	2	120	120	....	....	....	....	....	2	165	165	......	......
Loyalhanna Coal and Coke Co.,	Cambria,	....	....	9	650	650	....	....	....	6	470	6	2,450	950	......	......
Henrietta Coal Mining Co.,	Cambria,	3	300	3	300	600	....	....	....	3	500	2	400	300	......	......
A. F. Clark & Co.,	Cambria,	....	....	1	30	30	....	....	....	....	....	1	400	....	......	......
Geo. B. Newton Co.,	Cambria,	....	....	....	....	....	....	....	2	....	....	....	....	....	......	......
C. A. Buch,	Cambria,	....	....	1	25	25	....	....	....	....	....	....	....	....	......	......
S. Hamilton Coal Co.,	Somerset,	....	....	2	150	150	....	....	....	1	80	....	....	....	......	......
Cambria Coal Mining Co.,	Cambria,	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......
D. Laughman and J. Leahy,	Cambria,	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......
Bando Coal Co.,	Somerset,	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......
Bethel Coal Co.,	Somerset,	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......
M. Bracken Coal Co.,	Cambria,	....	....	1	50	50	....	....	....	1	50	....	....	....	......	......
D. Laughman,	Cambria,	1	25	1	25	50	1	....	....	2	30	1	240	100	......	......
Ferndale Coal Co.,	Cambria,	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......
Whitney, Kemmer & Holts,	Somerset,	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......
Balzell Coal Co.,	Cambria,	....	....	....	....	....	....	....	1	....	....	....	....	....	......	......
Lorain Steel Co.,	Cambria,	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......
Merchants Coal Co.,	Somerset,	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......
Listie Mining and Manfg. Co.,	Somerset,	....	....	2	200	200	....	....	2	4	240	....	....	....	......	......
Lloydell Coal Co.,	Cambria,	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......
Logan Coal Co.,	Cambria,	1	100	....	....	100	....	....	....	1	75	1	200	100	......	......
Lilly Coal Co.,	Cambria,	....	....	1	50	50	....	....	....	....	....	....	....	....	......	......
Wilson Creek Coal Co.,	Somerset,	....	....	1	40	40	....	....	....	....	....	....	....	....	......	......

Llewellyn & Yeagley,	Cambria,															
Moshanon Coal Co.,	Cambria,			2	200	200	1			1	50	2	275	100		1
Murdock Brothers,	Somerset,			1	75	75				2	75					
Reading Coal and Iron Co.,	Somerset,			3	375	375			2			2	700	200	1	1
Penn. Bit. Coal Co.,	Cambria,			2	180	180				1	60	1	100	75		
Priscilla Coal Co.,	Cambria,															
J. W. Metzer,	Cambria,															
Stineman Brothers,	Cambria,			5	550	550			2	4	350	3	800	500	1	1
Stineman Coal Co.,	Cambria,			1	150	150			2	1	160				1	
South Fork Coal Co.,	Cambria,			3	300	300				1	80	1	500	500		1
Standard Coal Co., Limited,	Cambria,															
Steward Coal Mining Co.,	Somerset,			2	250	250			1			1	50	15		11
Robinson & Irwin,	Cambria,															
Shamrock Coal Co.,	Somerset,			1	60	60										1
Shoemaker Coal Co.,	Cambria,															
Wells Creek Coal Co.,	Somerset,	1	15			15										
Sonman Shaft Coal Co.,	Cambria,			3	260	260			2	4	570	3	1,400	400	1	
Somerset Mining Co.,	Somerset,															
Grand total,		22	2,325	110	14,140	16,465	3	3	65	79	10,150	72	15,770	8,005	33	37

TABLE III—Showing the number of each class of employes at each colliery in the Sixth Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, book-keepers and clerks.	All other employes.	Total outside.	Grand total inside and outside.
Berwind White C. M. Co.																		
Eureka No. 30,	Somerset,	3	......	320	30	12	2	26	393	1	3	11	1	......	1	24	41	434
Eureka No. 31,	Somerset,	3	......	295	60	13	......	30	401	1	5	5	1	......	1	18	31	432
Eureka No. 32,	Somerset,	2	......	325	45	13	2	25	412	1	2	7	1	......	1	23	35	447
Eureka No. 33,	Somerset,	2	......	219	10	8	1	16	256	1	2	5	1	......	1	14	24	280
Eureka No. 34,	Somerset,	3	......	385	51	12	2	15	368	1	2	9	1	......	1	23	37	405
Eureka No. 35,	Somerset,	3	......	324	74	12	......	27	440	1	3	8	1	......	1	20	34	474
Eureka No. 36,	Somerset,	2	......	255	44	8	......	28	337	1	2	5	1	......	1	14	24	361
Eureka No. 37,	Cambria,	2	......	163	30	7	......	28	230	1	2	5	1	......	1	13	23	253
Eureka No. 38,	Somerset,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Eureka No. 39,	Somerset,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Yellow Run shaft,	Cambria,	2	......	260	13	21	6	2	304	......	3	5	......	......	1	6	15	319
Total,		22	......	2,546	357	106	13	197	3,141	8	24	60	8	......	9	155	264	3,405
Webster Coal and Coke Co.																		
Webster No. 1,	Cambria,	1	......	110	......	11	2	7	131	......	1	1	......	......	1	7	10	141
Webster No. 2,	Cambria,	1	......	45	......	6	1	16	69	......	2	3	1	......	......	5	11	80
Webster No. 3,	Cambria,	1	2	130	......	24	7	22	186									
Webster No. 5,	Cambria,	1	2	123	......	22	4	22	174	1	11	8	3	......	4	55	82	544
Webster No. 6,	Cambria,	1	......	76	......	12	4	9	102									
Webster No. 8,	Cambria,																	
Webster No. 15,	Cambria,	1	......	35	......	3	......	2	41	......	1	3	......	......	1	4	9	50
Total,		6	4	519	......	78	18	78	703	1	15	15	4	......	6	71	112	815

Puritan Coal Mining Co.																		
Puritan No. 1,	Cambria,	1	......	170	......	20	4	17	212	......	2	4	......	......	3	7	16	228
Puritan No. 2,	Cambria,	1	......	22	......	4	......	1	28	......	......	......	......	......	2	......	2	30
Puritan No. 3,	Cambria,	1	......	48	......	6	2	2	59	......	1	2	......	......	3	3	9	68
Total,	......	3	......	240	......	30	6	20	299	......	3	6	......	......	8	10	27	326
Cambria Steel Co.																		
Rolling Mill,	Cambria,	2	4	448	......	67	24	52	597	1	7	17	1	......	4	30	60	657
Conemaugh slope,	Cambria,	1	......	102	......	9	......	6	118	1	2	3	......	......	2	11	19	137
Franklin slope,	Cambria,	1	......	31	......	2	......	3	37	......	2	1	......	......	1	3	7	44
Franklin No. 1,	Cambria,	1	......	109	......	10	4	9	133	......	3	4	......	......	1	11	19	152
Franklin No. 2,	Cambria,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Total,	......	5	4	690	......	88	28	70	882	2	14	25	1	......	8	55	105	990
W. H. Piper & Co.																		
Sonman No. 1,	Cambria,	1	......	48	......	7	2	2	60	......	2	2	......	......	......	......	4	64
Sonman No. 2,	Cambria,	1	......	149	......	20	3	......	173	......	3	4	......	......	1	3	11	184
Sonman No. 3,	Cambria,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	44
Sonman No. 4,	Cambria,	1	......	40	......	2	1	......	44	......	......	......	......	......	......	......	......	......
Total,	......	3	......	237	......	29	6	2	277	......	5	6	......	......	1	3	15	292
Coulter & Huff.																		
Argyle,	Cambria,	1	......	150	2	9	......	2	164	1	3	......	......	......	1	18	25	189
Conemaugh,	Cambria,	1	......	37	1	4	......	......	43	1	1	......	......	......	......	3	7	50
Kokomo,	Cambria,	1	......	12	......	2	......	......	15	......	......	......	......	......	......	......	......	15
Total,	......	3	......	199	3	15	......	2	222	2	4	......	......	......	1	21	32	254
George Pierce & Sons.																		
Calwell,	Cambria,	1	......	30	......	2	......	1	34	1	1	......	......	......	......	4	6	40
Excelsior,	Cambria,	1	......	8	......	1	......	......	10	......	......	1	......	......	......	1	2	12
Total,	......	2	......	38	......	3	......	1	44	1	1	1	......	......	......	5	8	52
A. J. Haws & Sons, Ltd.																		
Haws shaft,	......	1	......	37	......	4	......	3	45	......	......	1	......	......	1	7	9	54
Coopersdale,	......	1	......	14	......	2	......	......	17	......	......	......	......	......	1	1	2	19
Total,	......	2	......	51	......	6	......	3	62	......	......	1	......	......	2	8	11	73
Loyalhanna Coal and Coke Co.																		
Sonman shaft No. 1,	Cambria,	1	......	161	6	14	......	7	189	1	2	6	1	......	3	8	21	210
Loyalhanna, No. 3,	Cambria,	1	......	60	3	5	......	......	69	......	2	1	4	......	1	2	10	79
Total,	......	2	......	221	9	19	......	7	258	1	4	7	5	......	4	10	31	289
Henrietta Coal Mining Co.																		
Henrietta shaft No. 1,	Cambria,	1	......	185	12	21	8	15	242	......	3	5	......	......	1	14	23	265
Henrietta shaft No. 2,	Cambria,																	
Total,	......	1	......	185	12	21	8	15	242	......	3	5	......	......	1	14	23	265

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, book-keepers and clerks.	All other employes.	Total outside.	
A. F. Clark & Co.																		
Stony Creek,	Somerset,	1	......	33	2	5	2	3	46	......	2	2	......	......	2	3	9	55
Somerset,	Somerset.	1	......	10	2	2	......	2	17	......	......	1	......	......	1	1	3	20
Total,		2	......	43	4	7	2	5	53	......	2	3	......	......	3	4	12	75
George B. Newton & Co.																		
Hopfer, No. 1,	Cambria,	......	......	30	......	4	1	1	36	......	1	......	......	......	2	2	5	41
Plane No. 2,	Cambria,	1	......	8	......	1	......	......	10	......	1	......	......	......	2	2	5	15
Total,		1	......	38	......	5	1	1	46	......	2	......	......	......	4	4	10	56

Recapitulation.

Names of Operators and Collieries.	County.	Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, book-keepers and clerks.	All other employes.	Total outside.	Grand total inside and outside.
Berwind White C. M. Co.,	Somerset,	22	......	2,546	357	106	13	197	3,241	8	24	60	8	......	9	155	264	3,505
Webster Coal and Coke Co.,	Cambria,	6	4	519	......	78	18	78	703	1	15	15	4	......	6	71	112	815
Puritan Coal Mining Co.,	Cambria,	3	......	240	......	30	6	20	299	......	3	6	......	......	8	10	27	326
Cambria Steel Co.,	Cambria,	5	4	690	......	88	28	70	885	2	14	25	1	......	8	55	105	990
W. H. Piper & Co.,	Cambria,	3	......	237	......	29	6	2	277	......	5	6	......	......	1	3	15	292
Coulter & Huff,	Cambria,	3	......	199	3	15	......	2	222	2	4	......	......	......	2	24	32	254
Geo. Pierce & Sons,	Cambria,	2	......	38	......	3	......	1	44	1	1	1	......	......	......	5	8	52
A. J. Haws & Sons,	Cambria,	2	......	51	......	6	......	3	62	......	......	1	......	......	2	8	11	73

Loyalhanna Coal and Coke Co.,	Cambria,	2	......	221	9	19	......	7	158	1	4	7	5	......	4	10	31	189
Henrietta Coal Mining Co.,	Cambria,	1	......	185	12	21	8	15	242	......	3	5	......	......	1	14	23	265
A. F. Clark & Co.,	Cambria,	2	......	43	4	7	2	5	63	......	2	3	......	......	3	4	12	75
Geo. B. Newton Co.,	Cambria,	1	......	38	......	5	1	1	46	......	2	......	......	......	4	4	10	56
C. A. Buch,	Cambria,	1	......	90	2	7	2	......	102	1	1	1	......	......	......	2	5	107
S. Hamilton Coal Co.,	Somerset,	1	......	36	......	7	1	6	51	1	2	1	......	......	1	2	7	58
Cambria Coal Mining Co.,	Cambria,	1	......	23	......	2	1	......	27	......	1	......	......	......	1	1	3	30
D. Laughman and J. Leahy,	Cambria,	1	......	40	......	6	......	......	47	1	1	......	......	......	1	......	3	50
Bando Coal Co.,	Somerset,	1	......	25	......	1	......	2	29	......	1	......	1	......	1	......	3	32
Bethel Coal Co.,	Somerset,	1	......	16	......	3	......	3	23	......	......	......	......	......	2	3	5	28
M. Bracken Coal Co.,	Cambria,	1	......	38	......	4	1	......	41	......	......	1	......	......	1	1	3	47
D. Laughman,	Cambria,	1	......	80	......	20	2	......	103	1	1	1	......	......	2	16	21	124
Ferndale Coal Co.,	......	1	......	13	......	1	......	......	15	......	......	......	......	......	1	1	2	17
Whitney & Kemmer & Holts,	Somerset,	1	......	65	......	5	1	3	75	......	1	......	......	......	2	2	5	80
Balzell Coal Co.,	Cambria,	1	......	30	......	4	3	5	43	......	1	......	1	......	1	1	4	47
Lorain Steel Co.,	Cambria,	......	......	23	......	2	......	......	25	......	1	......	......	......	1	1	3	28
Merchants Coal Co.,	Somerset,	2	......	35	......	1	......	1	39	......	2	4	......	......	2	6	14	53
Listie Mining and Manfg. Co.,	Somerset,	1	......	150	2	14	7	14	188	......	2	2	2	......	3	6	15	203
Lloydell Coal Co.,	Cambria,	1	......	67	......	8	3	2	81	......	2	......	......	......	......	3	5	86
Logan Coal Co.,	Cambria,	1	......	68	2	8	2	7	88	1	1	1	......	......	2	1	6	94
Lilly Coal Co.,	Cambria,	1	......	137	......	10	3	2	153	1	1	......	......	......	......	7	9	162
Wilson Creek Coal Co.,	Somerset,	1	......	42	1	3	1	......	48	......	2	1	2	......	2	9	16	64
Llewellyn & Yeagley,	Cambria,	1	......	14	......	2	......	......	17	......	......	......	......	......	1	1	2	19
Moshannon Coal Co.,	Cambria,	1	......	39	......	2	......	......	42	1	2	2	......	......	1	5	11	53
Murdock Brothers,	Somerset,	1	......	25	......	2	......	2	30	......	1	1	......	......	2	1	5	35
Reading Coal and Iron Co.,	Somerset,	1	......	85	23	10	......	9	128	......	4	3	......	......	3	14	24	152
Penn. Bit. Coal Co.,	Cambria,	1	......	100	......	9	......	......	110	1	1	3	1	......	1	4	11	121
Pricilla Coal Co.,	Cambria,	1	......	54	1	4	......	......	60	1	1	......	......	......	2	2	6	66
J. W. Mentzer,	Cambria,	1	......	30	2	4	1	......	38	1	1	......	1	......	1	......	4	42
Stineman Brothers,	Cambria,	2	......	339	9	29	3	......	382	......	3	6	......	......	3	15	27	409
Stineman Coal Co.,	Cambria,	2	......	218	5	18	5	......	248	......	2	2	......	......	2	8	14	262
South Fork Coal Co.,	Cambria,	1	......	175	......	13	5	3	197	......	2	4	1	......	2	6	15	212
Standard Coal Co., Ltd.,	Cambria,	1	......	60	......	5	1	1	68	......	......	......	......	......	......	5	5	73
Steward Coal Mining Co.,	Somerset,	1	......	37	1	......	......	1	40	......	2	4	1	......	2	8	17	57
Robinson & Irwin,	Cambria,	1	......	18	1	2	......	......	22	1	......	......	......	......	......	......	1	23
Shamrock Coal Co.,	Somerset,	1	......	30	2	2	1	5	41	......	1	2	......	......	1	1	5	46
Shoemaker Coal Co.,	Cambria,	1	......	58	......	4	3	......	66	1	1	......	......	......	1	2	5	71
Wells Creek Coal Co.,	Somerset,	1	......	60	......	8	2	1	72	......	1	......	......	......	2	......	3	75
Sonman shaft Coal Co.,	Cambria,	1	......	100	......	10	2	5	118	......	1	3	......	......	1	2	7	125
Somerset Mining Co.,	Somerset,	1	......	19	......	1	......	......	21	......	......	......	......	......	1	1	2	23
Grand total,	......	90	8	7,346	436	638	132	473	9,123	27	120	171	28	......	96	500	913	10,066

TABLE III-- Continued.

Names of Operators.	County.	Number of Days Worked in Each Month.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Berwind White Coal Mining Co.,	Somerset,	20	17	19	18	20	18	17	20	19	19	17	18	222
Webster Coal and Coke Co.,	Cambria,	24	21	23	19	18	17	16	18	18	22	19	19	234
Puritan Coal Mining Co.,	Cambria,	19	17	21	16	16	13	13	10	17	14	12	10	178
Cambria Steel Co.,	Cambria,	24	24	24	24	25	23	23	25	24	24	21	20	281
W. H. Piper & Co.,	Cambria,	19	15	17	15	15	13	12	12	11	13	15	15	172
Coulter & Huff,	Cambria,	26	19	24	21	20	17	17	19	19	21	19	19	241
Geo. Pierce & Sons,	Cambria,	17	15	20	16	12	12	12	8	15	18	17	22	184
A. J. Haws & Sons,	Cambria,	26	23	25	25	27	24	26	27	25	26	24	26	304
Loyalhanna Coal and Coke Co.,	Cambria,	21	18	17	14	15	12	12	11	18	17	18	20	172
Henrietta Coal Mining Co.,	Cambria,	22	17	25	26	26	25	22	25	23	25	19	22	277
A. F. Clark & Co.,	Cambria,	....	....	....	....	....	....	....	....	12	8	14	13	47
Geo. B. Newton Co.,	Cambria,	9	6	13	6	6	4	4	2	8	4	5	18	85
C. A. Buch,	Cambria,	18	9	19	20	19	10	20	12	16	21	17	19	200
S. Hamilton Coal Co.,	Somerset,	24	23	20	26	21	22	25	18	23	25	21	23	271
Cambria Coal Mining Co.,	Cambria,	14	11	11	9	10	1	10	8	9	13	13	16	125
D. Laughman and J. Leahy,	Cambria,	20	18	22	21	16	18	20	18	18	24	23	22	240
Bando Coal Co.,	Somerset,	....	20	21	12	16	12	7	18	20	24	25	26	201
Bethel Coal Co.,	Somerset,	30	25	28	27	26	25	24	26	25	25	23	24	308
M. Bracken Coal Co.,	Cambria,	14	11	18	19	14	9	11	9	18	12	17	22	174
D. Laughman,	Cambria,	24	13	22	23	20	18	20	15	12	11	20	23	221
Ferndale Coal Co.,	....	....	....	....	....	....	....	....	....	....	22	22	21	65
Whitney, Kemmer & Holts,	Somerset,	10	10	20	20	22	22	20	10	10	10	9	10	173
Balzell Coal Co.,	Cambria,	16	6	18	15	13	10	14	14	9	15	10	18	158
Lorain Steel Co.,	Cambria,	15	14	11.50	10.50	9	11	9.50	9.50	12	12	13.75	23	153.75
Merchants Coal Co.,	Somerset,	....	....	....	....	....	....	....	....	....	25	25	25	75
Listie Mining and Manfg. Co.,	Somerset,	22	9	12	22	11	11	15	19	23	24	17	19	204
Lloydell Coal Co.,	Cambria,	22	10	21	20	16	12	18	21	20	22	19	20	224
Logan Coal Co.,	Cambria,	23	20	24	21	11	21	21	22	20	23	19	21	246
Lilly Coal Co.,	Cambria,	23	13	18	23	15	11	11	8	6	15	14	15	172
Wilson Creek Coal Co.,	Somerset,	25	17.50	25	22	19	18	9	12	26	22.50	22	22	240
Llewellyn & Yeagley,	Cambria,	....	15	14	13	10	16	14	12	13	24	19	23	173
Moshannon Coal Co.,	Cambria,	24	18	25	22	19	14	16	24	22	25	20	22	251
Murdock Brothers,	Somerset,	18	18	16	14	14	....	....	....	....	....	8	1	100
Reading Coal and Iron Co.,	Somerset,	26	22	25	25	25	25	23	25	21	26	20	24	287

Penn. Bituminous Coal Co.,	Cambria,	....	....	....	....	....	20	18	18	13	21	20	18	128
Priscilla Coal Co.,	Cambria,	25	20	22	14	12	19	-	10	11	15	19	21	188
J. W. Mentzer,	Cambria,	16	12	16	15	6	12	14	5	7	9	14	18	144
Stineman Brothers,	Cambria,	25	23.7	26	24	25	24	22.5	26	23	26	24	22.5	291.7
Stineman Coal Co.,	Cambria,	25	22.4	26	24	19	22.6	24.5	23	22	19	20	20	267.5
South Fork Coal Co.,	Cambria,	22	....	16	23	14	25	17	25	21	25	24	21	233
Standard Coal Co., Limited,	Cambria,	24	22	23	24	23	20	17	15	12	13	17	14	224
Steward Coal Mining Co.,	Somerset,	23	21	19	20	25	20	18	22	23	18	21	19	249
Robinson & Irwin,	Cambria,	26	24	26	25	25	25	21	25	24	25	24	24	294
Shamrock Coal Co.,	Somerset,	20	14	21	20	20	18	20	22	22	20	22	20	207
Shoemaker Coal Co.,	Cambria,	....	....	....	1	10	11	21	5	....	16	15	13	92
Wells Creek Coal Co.,	Somerset,	20	20	20	21	21	20	12	3	8	20	18	20	203
Sonman Shaft Coal Co.,	Cambria,	20	9	16	20	8	10	11	9	....	....	10	17	130
Somerset Mining Co.,	Somerset,	....	....	....	....	....	....	....	....	....	....	17	21	39

TABLE IV—List of fatal accidents that occurred in and about the mines of the Sixth Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	4	Mike Barron,	Austrian,	Loader,	36	M.	1	2	Eureka No. 35,	Somerset,	Was badly crushed; he was sitting in his room and the empty cars being pushed by motor caught him between cars and rib.
	22	John Marstig,	Slav,	Miner,	20	S.	....	....	Sonman No. 1,	Cambria,	Killed by a fall of coal after having been notified not to go under it by the foreman.
	25	Joseph Clemens,	Pole,	Miner,	22	S.	....	....	Bethel,	Somerset,	Fatally injured by a fall of coal; he had put a blast which did not bring it down, so he lay down to undermine further, when it fell on him.
Feb.	16	Andy Hershstock,	Austrian,	Loader,	32	M.	1	1	Eureka No. 35,	Somerset,	Was running a coal car out of the room and struck his head against trolley wire.
March	11	Silas Yingling,	American,	Miner,	38	M.	1	6	Kokomo,	Cambria,	Killed by a fall of rock; it was a pot hole or horseback; was unavoidable.
	20	Zachariah Stayne,	American,	Miner,	23	S.	....	....	Lloydell,	Cambria,	Was injured by a fall of roof. Place was well propped, but roof was very bad.
	26	Sarus Thurston,	Norwegian,	Miner,	33	M.	1	4	Eureka No. 30,	Somerset,	Was found dead on the road under trolley wire.
May	6	John Comeskie,	Slav,	Miner,	25	S.	....	....	Eureka No. 35,	Somerset,	Fatally injured by a fall of coal. He had left a stump of coal to hold the coal up and lay down under the cut of coal to mine out the stump.
	11	Valentine Postlemick,	Austrian,	Road cleaner,	43	M.	1	4	Eureka No. 30,	Somerset,	Run over by electric motor. He was not on the lookout for motor, and was told to get off the track, but did not.
	27	James Oder,	Pole,	Miner,	42	M.	1	4	Eureka No. 36,	Somerset,	Ran his car on the heading to load coal that was not on the road and fell, his head striking the rail; when picked up he was dead; no marks were found on him only where his head struck the rail. The electric wire was right above him.

	29	Daniel McCarty, ...	American, ...	Miner, ...	40	M.	1	2	Webster No. 5, ...	Cambria,..	Killed by a fall of rock, a pot hole in the roof; an unavoidable accident.
June	4	Fadgit Lamon, ...	Slav, ...						Sonman shaft, ...	Cambria,..	Struck by cars on the slope which had broken loose from rope. This man had no business on the slope, as there is a regular walking road.
	6	Thomas Acon, ...	English, ...	Miner, ...	41	M.	1	6	Webster No. 3, ...	Cambria,..	This man was one of a crowd of miners coming out of the mine; all rushed to get on an empty Dilly trip which hauls the men in the evening; he ran around some timber which enclosed the Bull wheel, and stepped into the wheel.
	18	Andy Stilman, ...	Pole, ...	Miner, ...	24	S.	....	....	Eureka No. 33, ...	Somerset,	Coming out of the mine and was struck by a motor.
Aug.	3	John J. Head, ...	English, ...	Miner, ...	28	M.	1	....	Adams, ...	Somerset,	Head crushed by a fall of coal; he was considered a careful miner, but in this case he neglected to sprag the coal.
Sept.	18	Thomas Davis, ...	Welsh, ...	Miner, ...	28	S.	....	....	Conemaugh slope,	Cambria,..	Crushed by a fall of roof; he was taking down draw slate and above this a bad piece of roof came in, which fell on him.
Nov.	12	Joe Pelsey, ...	Slav, ...	Miner, ...	28	S.	....	....	Rolling Mill, ...	Cambria,..	Killed by a fall of roof; was undermining draw slate, when it fell on him; fall caused by a bad piece of roof above draw slate.
Dec.	10	John Hegslay, ...	Slav, ...	Miner, ...	36	M.	1	1	Webster No. 1, ...	Cambria,..	Head crushed by fall of coal; had commenced to undermine on back of slip and it slid down on him.
				Miner, ...	35	M.	1	2			

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Sixth Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	1	Leam Somar,	Belgian,	Miner,	30	S.	Lloydell,	Cambria,	Collar bone broken by a fall of coal.
	11	Mike Plapa,	Austrian,	Miner,	36	M.	Eureka No. 36,	Somerset,	Injured by fall of rock.
	15	Wm. Parker,	American,	Driver,	22	S.	Webster No. 3,	Cambria,	Fracture of leg; caught between cars.
	17	Jacob Crojle,	American,	Miner,	30	M.	Mostollor No. 1,	Somerset,	Knee bruised by a fall of coal.
	21	Irvin Millar,	American,	Miner,	27	S.	Conemaugh,	Cambria,	Leg broken; caught between car and door.
Feb.	14	James Barret,	American,	Miner,	48	M.	Webster No. 3,	Cambria,	Severely injured by a fall of coal.
	14	John Sumafsky, Sr.,	Slav,	Loader,	39	M.	Rolling Mill,	Cambria,	Leg broken; fall of rock.
	19	John Hunneuzik,	Slav,	Loader,	19	S.	Eureka No. 32,	Somerset,	Arm and toes crushed by cars. Arm had to be amputated.
March	8	Alex. Farley,	American,	Trip rider,	18	S.	Puritan No. 1,	Cambria,	Arm broken by two motors colliding.
	16	Edward Harkins,	American,	Driver,	20	S.	Rolling Mill,	Cambria,	Bruised about body by a mule.
April	15	Mike Musrak,	Pole,	Miner,	26	S.	Sonman shaft No. 2,	Cambria,	Collar bone broken by a fall of coal.
May	2	Angelo Dolo,	Italian,	Miner,	37	S.	Eureka No. 36,	Somerset,	Flesh wound on hand and right leg by cars.
	27	Thomas Smith,	Irish,	Miner,	42	S.	Webster No. 3,	Cambria,	Leg broken; struck by hauling rope.
	29	Geo. Procko,	Slav,	Miner,	32	M.	Henrietta shaft,	Cambria,	Shoulder blade broken by a fall of rock.
June	18	John Mahery,	Irish,	Miner,	25	M.	Webster No. 6,	Cambria,	Injured by fall of rock.
	25	George Mackey,	Scotch,	Driver,	31	M.	Henrietta shaft,	Cambria,	Crushed between car and roof.
July	11	Frank Kogntek,	Pole,	Miner,	32	M.	Rolling Mill,	Cambria,	Face burned by gas explosion.
Aug.	2	Andrew Cahill,	American,	Miner,	21	S.	Webster No. 3,	Cambria,	Collar bone broken; a lump of coal struck him.
	10	Thomas Bottorf,	American,	Driver,	38	M.	Henrietta shaft,	Cambria,	Toes mashd between cars.
	13	Evan W. Jones,	Welsh,	Weighmanster,	66	S.	Franklin,	Cambria,	Seriously injured; rope broke on plane and cars ran into weigh house.
	14	James Probert,	American,	Driver,	27	S.	Lloydell,	Cambria,	Leg broken; struck by plane rope.
	17	Michael Kanatasco.	Pole,	Miner,	26	M.	Lilly slope,	Cambria,	Back injured by fall of roof.
	30	Mike Yelon,	Slav,	Miner,	40	S.	Krebs,	Somerset,	Hip dislocated by fall of roof.
Sept.	4	Wm. Piety,	Pole,	Miner,	28	S.	Webster No. 5,	Cambria,	Leg broken; run over by car.
	7	Edward Irvin,	American,	Driver,	23	S.	Coaldale No. 9,	Cambria,	Leg broken between cars.
Oct.	25	Andy Moelner,	Hungarian,	Miner,	35	M.	Eureka No. 30,	Somerset,	One eye destroyed by a blown out shot.
	19	Walter Harvey,	Slav,	Miner,	22	S.	Rolling Mill,	Cambria,	Back badly injured; fall of slate.
Nov.	12	Joe Yuhase,	American,	Motorman,	22	M.	Webster No. 1,	Cambria,	Crushed between motor and cars.
	19	Jos. Hazler,	American,	Brakeman,	44	M.	Webster No. 1,	Cambria,	Leg broken between cars.
Dec.	7	Vandas Vargo,	Hungarian,	Miner,	42	M.	Sonman shaft No. 1,	Cambria,	Fracture of leg by fall of coal.
	28	Henry Cordy,	French,	Miner,	26	M.	Portage slope,	Cambria,	Skull fractured by a fall of slate.

Seventh Bituminous District.

ALLEGHENY, WASHINGTON AND BEAVER COUNTIES.

Idlewood, Pa., March 20, 1902.

Hon. James W. Latta, Secretary of Internal Affairs, Harrisburg, Pa.:

Sir: I have the honor of herewith submitting to you my annual report for the Seventh Bituminous Coal District for the year 1901.

There has been a brisk demand for coal, and the relationship between capital and labor has continued harmonious, consequently, there has been great activity in the coal business throughout the year, which was retarded only by lack of railroad facilities to transport the product to market. The inability on the part of the railroad companies to handle the coal has kept the production considerably below what it otherwise would have been.

The State Board of Examiners, at its last meeting made some slight changes in the boundary lines of the district which add somewhat to the total production. By taking the territory included in the district as at present arranged and comparing the output of coal for the years 1900 and 1901, there is an increase in production for the latter year of 764,707 tons. The greater number of mines are now equipped with mining machinery, there being in use at the present time about 271 of the punching type operated by compressed air, and about 171 of the cutter-chain type operated by electricity. The former type of machine has been in use in this district for about twenty years, and I am unaware of any fatal or serious accident having resulted from their use, and the sanitary condition of the mines is somewhat improved by the use of compressed air as a motive power. The electric cutter-chain type of machine has been introduced within recent years, and accidents resulting from the use of electricity are of rather frequent occurrence; besides the use of this type of machine is injurious to the sanitary condition of the mines by reason of the poisonous fumes evolved from large quantities of impure oils which must be constantly poured upon the heated parts of the machinery while it is in motion. Electric locomotives are now extensively used to haul coal from the interior of the mines.

This method of haulage, where the road grades are suitable, is very successful, and with proper precautions they can be operated with comparative safety. There occurred during the year thirty-five fatal and seventy-three non-fatal accidents, the causes of which will be found in another part of this report. In this connection I deem it unnecessary to make any lengthy comments upon the circumstances attending the various accidents resulting in loss of life or serious personal injury, as such comments would be only a repetition of statements made in former reports, but I may state that the greater number of the accidents were preventible, and in a number of cases were due to carelessness on the part of the victims, while in other instances the evidence would lead to the conclusion that the victims were incompetent either to recognize the danger or to protect themselves therefrom, a fact much to be deplored, but easily comprehended by all who are familiar with the class of labor we are now largely dependent upon to operate the mines. The report contains a brief description of the condition of the several groups of mines, and the improvements made during the year, together with the usual statistical tables; all of which is respectfully submitted.

Yours respectfully,
JAMES BLICK,
Inspector.

Table Showing the Production of Coal. Number of Persons Employed by Each Company and Average Number of Tons Produced per Employe. Number of Fatal Accidents and Tons of Coal Produced per Life Lost. Number of Fatal and Non-Fatal Accidents and Number of Tons of Coal Produced per Accident in the Seventh Bituminous District 1901.

Names of Operators.	Number of persons employed.	Number of tons of coal produced.	Number of fatal accidents.	Number of tons of coal produced per life lost.	Number of accidents, fatal and non-fatal.	Number of tons produced per accident.
Pittsburg Coal Co.,	6,766	5,289,628	26	203,451	80	66,120+
New York and Cleveland Gas Coal Co.,	893	775,163	1	775,163	3	258,387+
Monongahela River C. C. & C. Co.,	785	519,170	1	519,170	2	259,585
Mansfield Coal and Coke Co.,	396	443,634	2	221,817	6	73,939
Pittsburg and Buffalo Co.,	254	171,674	2	85,837	5	34,334+
Carnegie Coal Co.,	230	185,800	1	185,800	1	185,800
Midland Coal Co.,	310	205.485			2	102,742+
Castle Shannon Railroad Co.,	134	111,010	1	111,010	3	97,003+
Mankedick Coal Co.,	108	70,000				
Witch Hazel Coal Co.,	149	110,244	1	110,244	3	36,748
Harrison Gas Coal Co.,	61	56,703				
Pan Handle Mining Co.,	53	54,307			2	27,153+
Shaw Coal Co.,	170	33,668			1	33,668
Amyville-Youghiogheny Gas Coal Co.,	53	27,360				
Meadow Lands Coal Co.,	100	35,848				
J. V. H. Cook & Sons,	47	23,601				
Chartiers Coal and Coke Co.,	25	17,400				
P. F. Hormel,	28	11,092				
Jacob Weinman,	26	15,842				
Thomas Fox Estate,	19	11,009				
Bulger Block Coal Co.,	42	16,000				
W. S. B. Hayes,	14	8,555				
G. Vogel,	22	6,726				
Verner Coal and Coke Co.,	26	3,766				
Mount Oliver Coal and Stone Co.,	19	8,000				
G. W. Kramer,	28	15,050				
Total and average,	10,758	8,226,705	35	276,561	108	106,861+

Average production in tons per employe, 764.7.

Summary of Statistics.

Number of mines in the district,	76
Number of mines in operation during 1901,	73
Number of tons of coal produced,	*8,226,705
Number of tons shipped,	7,907,827
Number of tons used for steam at mines,	113,661
Number of tons sold to employes and local trade,	205,890
Approximate number of tons of machine mined coal,	4,628,720
Number of persons employed inside the mines,	9,530
Number of persons employed outside the mines,	1,228
Number of fatal accidents,	35
Number of tons of coal produced per each fatal accident,	235,048+
Number of non-fatal accidents,	73
Number of tons produced per each non-fatal accident,	112,694+

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*The discrepancy between the number of tons of coal shipped, used for steam and sold to local trade and the total production is 673 tons, which was produced in 1900.

Number of persons employed per each fatal accident,	307+
Number employed per each non-fatal accident, ...	147+
Number of wives made widows by accidents, ...	16
Number of children orphaned, ...	35
Number of kegs of powder used, ...	13,593
Number of pounds of dynamite used, ...	2,583
Number of cylindrical boilers in use, ...	30
Number of tubular boilers, ...	151
Number of steam locomotives, ...	13
Number of electric locomotives, ...	30
Number of horses and mules, ...	863

Only one locomotive is in use inside the mines.

Note...A considerable quantity of explosives is supplied the miners by persons not connected with the operating firms, and is not reported.

Classification of Accidents.	Fatal.	Non-fatal.	Total.
By falls of slate,	18	30	48
By falls of roof,	3	4	7
By falls of coal,	5	11	16
By mine cars,	6	15	21
By electric shock,	2	....	2
By gas explosions,	....	6	6
By mining machines,	1	2	3
By powder blasts,	....	1	1
Miscellaneous inside,	....	2	2
Miscellaneous outside,	....	2	2
Total,	35	73	108

Occupations of Persons Killed or Injured.	Fatal.	Non-fatal.	Total.
Miners,	28	50	78
Drivers,	3	10	13
Machine runners,	1	3	4
Machine helpers,	....	3	3
Road men,	1	2	3
Moter men,	1	....	1
Engine men,	....	1	1
Trip runners,	....	1	1
Laborers,	1	3	4
Total,	35	73	108

Nationalities of Persons Killed or Injured.	Fatal.	Non-fatal.	Total.
Americans,	8	19	27
English,	2	5	7
Welsh,	....	2	2
Scotch,	....	4	4
Irish,	2	2	4
Germans,	5	7	12
Poles,	4	8	12
Slavs,	3	4	7
Hungarians,	....	6	6
Italians,	5	8	13
Austrians,	3	2	5
Russians,	2	1	3
Belgians,	....	2	2
French,	1	3	4
Total,	35	73	108

Table giving name of mine, method of ventilation and haulage, kind of opening and whether worked by pick or machine in the Seventh Bituminous District.

Name of Mine.	Method of Haulage.	Method of ventilation.	Kind of opening.	Pick or machine.	Type of Machine.	Power used to operate machines.
Moon Run,	Electric locomotives,	Fan and furnace,	Drift,	Machine,	Morgan-Gardner, Ingersoll and Sullivan.	Electricity and compressed air.
First Pool No. 1,	Head and tail rope,	Fan,	Drift,	Machine,	Harrison, Sullivan and Ingersoll,	Compressed air.
First Pool No. 2,	Air locomotive and head and tail rope.	Fan,	Shaft,	Machine,	Harrison and Ingersoll,	Compressed air.
Jumbo,	Head and tail rope,	Fan,	Drift,	Machine,	Harrison and Ingersoll,	Compressed air.
Brier Hill,	Head and tail rope,	Furnace,	Drift,	Machine,	Sullivan,	Compressed air.
Nickel Plate,	Head and tail rope,	Furnace,	Drift,	Machine,	Harrison and Ingersoll,	Compressed air.
Laurel Hill No. 1,	Electric locomotive,	Fan,	Drift,	Machine,	Morgan-Gardner,	Electricity.
Laurel Hill No. 2,	Electric locomotive,	Fan,	Shaft,	Machine,	Morgan-Gardner,	Electricity.
Champion,	Head and tail rope,	Fan,	Drift,	Machine,	Harrison and Sullivan,	Compressed air.
National,	Head and tail rope,	Furnace,	Drift,	Machine,	Morgan-Gardner,	Electricity.
Oak Ridge,	Head and tail rope,	Fan,	Drift,	Machine,	Ingersoll,	Compressed air.
Cherry,	Electric locomotive,	Furnace,	Drift,	Machine,	Morgan-Gardner,	Electricity.
Boyd,	Head and tail rope,	Furnace,	Drift,	Machine,	Morgan-Gardner,	Electricity.
Fort Pitt,	Electric locomotive,	Furnace,	Drift,	Machine,	Jeffrey,	Electricity.
Grant,	Electric locomotive,	Fire basket,	Drift,	Machine,	Morgan-Gardner,	Electricity.
Nixon,	Electric locomotive,	Fan,	Drift,	Machine,	Jeffrey,	Electricity.
Leasdale,	Head and tail rope,	Fan,	Drift,	Machine,	Jeffrey,	Electricity.
Summer Hill,	Head and tail rope,	Fan,	Drift,	Machine,	Jeffrey,	Electricity.
Bower Hill,	Electric locomotive,	Furnace,	Drift,	Machine,	Jeffrey,	Electricity.
Bridgeville,	Electric locomotive,	Fan,	Drift,	Machine,	Jeffrey,	Electricity.
Slope,	Mules,	Fan,	Slope,	Machine,	Jeffrey,	Electricity.
Boon,	Electric locomotive,	Fan,	Drift,	Machine,	Jeffrey,	Electricity.
Allison,	Mules,	Fire baskets,	Drift,	Pick.		
Morgan,	Mules,	Fan,	Slope,	Machine,	Morgan-Gardner and Jeffrey,	Electricity.
Vulcan,	Electric locomotive,	Fan,	Slope,	Machine,	Morgan-Gardner and Jeffrey.	Electricity.
Laurel Hill No. 5,	Mules,	Fan,	Shaft,	Machine,	Morgan-Gardner and Ingersoll,	Electricity and compressed air.
Creedmore,	Mules,	Fan,	Shaft,	Machine,	Harrison and Sullivan,	Compressed air.
Ridgway,	Mules and rope,	Fan,	Slope,	Machine,	Harrison, Ingersoll and Sullivan,	Compressed air.
Pan Handle,	Head and tail rope,	Fan,	Drift,	Machine,	Ingersoll and Sullivan,	Compressed air.
Essen No. 1,	Head and tail rope,	Fan,	Drift,	Machine,	Jeffrey,	Electricity.

Harrison,	Electric locomotive,	Fan,	Slope,	Machine,	Ingersoll and Sullivan,	Compressed air.
Lake Superior,	Mules	Fan,	Slope,	Machine,	Jeffrey,	Electricity.
O. I. C.,	Mules,	Fan,	Drift,	Machine,	Link belt,	Electricity.
Essen No. 2,	Electric locomotive,	Fan,	Slope,	Machine,	Link belt and Morgan-Gardner,	Electricity.
Essen No. 3,	Electric locomotive,	Fan,	Slope,	Machine,	Link belt and Morgan-Gardner,	Electricity.
Federal No. 2,	Electric locomotive,	Furnace,	Drift,	Machine,	Morgan-Gardner,	Electricity.
Dickson,	Head and tail rope,	Fan,	Drift,	Machine,	Ingersol and Sullivan,	Compressed air.
Margerum,	Electric locomotive,	Furnace,	Drift,	Machine,	Jeffrey,	Electricity.
Partridge,	Electric locomotive,	Fan,	Drift,	Machine,	Jeffrey,	Electricity.
Hartley & Marshall,	Steam locomotive and head rope,	Fan,	Drift,	Machine,	Sullivan,	Compressed air.
Fair Haven,	Electric locomotive,	Furnace,	Drift,	Machine,	Morgan-Gardner,	Electricity.
Lick Run,	Mules,	Fan,	Slope,	Pick.		
Oak Hill No. 4,	Head and tail rope,	Furnace,	Drift,	Pick.		
Oak Hill No. 5,	Mules,	Furnace,	Drift,	Pick.		
Duquesne,	Mules,	Furnace,	Drift,	Pick.		
Becks Run,	Head and tail rope,	Furnace,	Drift,	Machine,	Morgan-Gardner,	Electricity.
Walton,	Head and tail rope,	Furnace,	Drift,	Machine,	Morgan-Gardner,	Electricity.
Hays Street Run,	Electric locomotive,	Fan,	Drift,	Pick.		
Midland No. 1,	Mules,	Fan,	Drift,	Machine,	Harrison, Ingersol and Sullivan,	Compressed air.
Mansfield No. 2,	Electric locomotive,	Fan,	Drift,	Machine,	Morgan-Gardner,	Electricity.
Hazel,	Electric locomotive,	Fan,	Slope,	Machine,	Morgan-Gardner and Jeffrey,	Electricity.
Meadow Lands,	Mules,	Fan,	Slope,	Machine,	Ingersol,	Compressed air.
Rich Hill,	Mules,	Fire basket,	Slope,	Pick.		
Katie,	Mules,	Fire sbaket,	Slope,	Machine,	Jeffrey,	Electricity.
Blythe,	Mules,	Fan,	Slope,	Machine,	Morgan-Gardner and Jeffrey,	Electricity.
Carnegie,	Electric locomotive,	Fan,	Drift,	Machine,	Morgan-Gardner,	Electricity.
Pine Ridge,	Mules,	Furnace,	Drift,	Pick.		
Shaw,	Mules,	Fire basket,	Drift,	Pick.		
Verner,	Mules,	Fire basket,	Slope,	Pick.		
Bulger,	Mules,	Fan,	Shaft,	Machine,		Electricity.
Hickman,	Mules,	Fire basket,	Drift,	Pick.		
Witch Hazel,	Head rope,	Fan,	Slope,	Machine,	Ingersol,	Compressed air.
Beachmount,	Mules,	Furnace,	Slope,	Pick.		
Fox,	Head rope,	Fan,	Drift,	Pick.		
Castle Shannon,	Mules,	Furnace,	Drift,	Pick.		
Streets Run,	Mules,	Furnace,	Drift,	Pick.		
Calhoon,	Mules,	Furnace,	Drift,	Pick.		
Bellwood,	Mules,	Furnace,	Drift,	Pick.		
Wenman,	Mules,	Furnace,	Drift,	Pick.		
Ocean,	Mules,	Fire basket,	Drift,	Pick.		
Rankin,	Mules,	Fire basket,	Slope,	Pick.		

Note.—There are in use in this district 94 Harrison, 89 Ingersol and 88 Sullivan mining machines of the punching type, making a total of 271 of this type of machine, all of which are operated by compressed air. There are also in use 74 Morgan-Gardner, 80 Jeffrey and 17 Link Belt machines of the cutter chain type, making a total of 171 of this type of machine, which are operated by electric power. There were about 4,628,720 tons of machine mined coal produced in the district during the year. All the coal produced in this district is mined from the Pittsburg seam, which will average about five feet in height of marketable coal.

Table on ventitlation—Continued.

Name of Mines.	Number of fans in use.	Number of furnaces in use.	Diameter of fans and width of furnaces.	Width of fans and height of furnace arch above grate bars.	Length of furnace arch.	Number of air splits in mine or section of mine.	Cubic Feet of Air in Each Split.					Number of persons employed inside.	Cubic feet of air per minute produced.	Cubic feet of air per minute produced per each employe.
							First.	Second.	Third.	Fourth.	Fifth.			
Jumbo,	1		10 ft.	4 ft. 4 in.		3	11,000	14,000	12,000			310	62,000	200
Shaw,†		3				3	13,200	9,600	7,200			149	42,000	281
Bulger,	1		10 ft.	4 ft. 4 in.										
Verner,†		1				1	6,000					18	6,000	333
Mansfield No. 2,	1		18 ft.	9 ft.		4	13,000	11,000	8,000	15,000		362	80,000	220
Nixon,*						3	7,000	7,000	11,000			156	40,000	256
Leasdale,*						2	10,000	8,000				95	27,000	284
Summer Hill,	1		16 ft.	6 ft.		2	18,000	14,000				169	32,000	189
Bower Hill,		1	8 ft. 8 in.	4 ft. 9 in.	26 ft.	2	30,000	20,600				109	50,000	458
Bridgeville,	1		16 ft.	5 ft.		5	8,000	6,000	5,000	12,000	6,500	144	60,000	416
Slope,	1		10 ft.	3 ft.		1	15,000					18	15,000	833
Hazel,	1		13 ft. 6 in.	5 ft.		4	12,000	8,000	8,000	7,000		221	72,000	325
Boon,	1		12 ft.	4 ft. 6 in.		2	10,000	6,000				103	28,000	271
Midland No. 1,	1		11 ft.	4 ft. 4 in.		3	15,500	10,000	20,000			288	59,000	204
Allison,†		2				2	16,000	5,000				177	21,000	118
Meadow Lands,‡	1		16 ft.	4 ft. 5 in.		1	9,000					86	9,000	104
Rich Hill,†		1				1	8,000					42	8,000	190
Katie,†		1				1	9,000					45	9,000	200
Blyth,	1		16 ft.	4 ft. 2 in.		2	11,000	13,000				44	30,000	681
Vulcan,	1		13 ft. 6 in.	5 ft. 6 in.		3	10,000	18,000	15,600			206	67,500	327
Morgan,	1		12 ft.	5 ft.		2	8,500	12,800				143	42,000	293
Laurel Hill No. 5,	1		16 ft.	5 ft.		2	13,500	15,000				191	38,000	198
Creedmore,	1		16 ft.	8 ft.		4	9,000	7,000	5,000	14,000		173	62,000	358
Laurel Hill No. 2,	1		20 ft.	6 ft.										
Ridgeway,	1		18 ft.	9 ft.		5	8,000	8,000	12,000	13,000	5,000	146	85,000	582
Pan Handle,	1		14 ft. 6 in.	4 ft. 6 in.		2	28,000	39,600				107	67,000	626
Calhoon,		1	5 ft.	3 ft. 6 in.	10 ft.	1	6,000					10	6,000	600
Bellwood,		1	8 ft. 6 in.	4 ft. 8 in.	30 ft.	3	10,000	5,000	5,000				15,000	
Streets Run,		1	6 ft.	4 ft. 6 in.		1	11,000					55	11,000	200
Hays Street Run,		2	7 ft.	4 ft.	20 ft.	3	14,000	14,000	14,000			230	52,000	226
First Pool No. 1,	1		24 ft.	7 ft. 6 in.		5	7,800	15,000	22,000	15,000	4,000	313	110,000	351

First Pool No. 2,	1	......	13 ft. 6 in	7 ft.	....	3	14,700	12,000	18,000	....	....	247	50,000	202
Lick Run,	1	......	25 ft.	7 ft. 6 in.	....	2	18,000	4,500	....	....	....	100	45,000	450
Walton,	1	......	12 ft.	4 ft.	....	3	6,000	15,000	18,000	....	....	220	45,000	204
Becks Run,	......	2	7 ft.	4 ft.	20 ft.	4	14,000	11,000	15,000	10,000	....	237	62,000	261
Fair Haven,	......	1	8 ft.	4 ft.	27 ft.	4	11,500	14,000	8,200	15,000	....	139	50,000	359
Castle Shannon,	......	1	7 ft. 2 in.	4 ft. 5 in.	25 ft.	3	6,000	5,000	11,000	....	....	124	32,000	258
Fox,	1	......	10 ft.	4 ft.	....	1	7,000	....	....	....	....	17	12,000	705
Hartley and Marshall,	1	......	25 ft.	7 ft. 6 in.	....	4	7,200	16,000	8,000	13,000	....	203	90,000	443
Moon Run, Section 1,	1	......	18 ft.	6 ft.	....	3	8,000	14,000	13,000	....	....	....	45,000	....
Moon Run, Section 2,	1	......	8 ft.	7 ft.	....	3	33,000	8,000	26,000	....	....	418	88,000	385
Moon Run, Section 3,	......	1	6 ft.	3 ft. 4 in.	20 ft.	2	11,000	8,000	....	....	....	....	28,000	....
Grant,†	......	1	....	....	....	1	5,000	....	....	....	....	25	5,000	200
Carnegie,	1	......	9 ft.	6 ft.	....	2	20,000	6,000	....	....	....	205	65,000	317
Fort Pitt,	......	1	8 ft. 6 in.	5 ft. 6 in.	13 ft.	3	5,000	6,000	14,000	....	....	117	26,000	222
Boyd,	......	1	8 ft.	4 ft.	21 ft.	2	4,000	14,000	....	....	....	85	18,800	221
Cherry,	......	1	8 ft.	4 ft. 7 in.	28 ft.	2	8,000	12,000	....	....	....	97	27,000	278
Pine Ridge,	......	1	6 ft. 6 in.	4 ft.	18 ft.	1	15,000	....	....	....	....	100	17,000	170
Oak Ridge,	1	......	12 ft.	4 ft.	....	1	15,500	....	....	....	....	59	15,500	262
National,	......	1	7 ft.	4 ft. 6 in.	26 ft.	2	7,800	10,000	....	....	....	72	28,000	388
Champion,	1	......	11 ft.	4 ft. 4 in.	....	4	10,000	11,000	12,000	5,000	....	176	85,000	482
Laurel Hill No. 1,	1	......	20 ft.	6 ft.	....	2	15,000	14,500	....	....	....	199	35,000	175
Nickel Plate,	......	1	8 ft.	5 ft. 6 in.	40 ft.	3	10,000	6,000	8,000	....	....	130	32,000	246
Brier Hill,	......	1	10 ft.	5 ft.	30 ft.	4	12,600	9,000	6,000	9,000	....	191	33,500	175
Essen No. 1,	1	......	20 ft.	6 ft.	....	4	7,000	12,000	7,000	4,000	....	149	67,000	449
Witch Hazel,	1	......	12 ft.	4 ft. 8 in.	....	2	8,000	13,000	....	....	....	136	27,000	198
Harrison,	1	......	25 ft.	7 ft. 6 in.	....	2	20,000	20,000	....	....	....	154	60,000	398
Lake Superior,	1	......	8 ft.	3 ft. 6 in.	....	3	9,500	10,000	14,000	....	....	125	46,000	368
O. I. C.,	1	......	12 ft.	5 ft.	....	1	36,000	....	....	....	....	81	36,000	444
Essen No. 2,	1	......	18 ft.	4 ft. 9 in.	....	3	7,000	9,500	12,000	....	....	134	38,500	28
Essen No. 3,	1	......	10 ft.	6 ft.	....	3	10,000	7,000	19,000	....	....	65	56,000	861
Hickman,	......	1	....	....	....	1	10,000	....	....	....	....	24	10,000	416
Federal No. 2,	......	1	10 ft.	5 ft.	30 ft.	2	9,000	11,000	....	....	....	76	35,000	460
Dickson,	1	......	10 ft.	4 ft. 4 in.	....	2	11,000	12,000	....	....	....	111	70,000	630
Margerum,	......	2	6 ft.	4 ft.	15 ft.	2	10,000	14,000	....	....	....	111	28,000	252
Partridge,	1	......	18 ft.	6 ft.	....	3	10,000	10,000	7,000	....	....	135	47,000	348
Oak Hill No. 5,	......	2	6 ft.	4 ft. 9 in.	18 ft.	4	13,000	10,500	12,000	9,000	....	287	51,000	177
Oak Hill No. 4,	......	1	8 ft.	4 ft. 4 in.	16 ft.	7	8,000	10,000	5,000	8,000	3,000	330	48,000	145
							10,000	6,000	....	....	....	....	....	....
Duquesne,	......	1	7 ft.	3 ft. 8 in.	25 ft.	3	4,500	8,000	9,600	....	....	190	34,000	178
Weinman,	......	1	....	....	....	1	4,000	....	....	....	....	26	4,000	153
Ocean,	......	1	....	....	....	1	5,000	....	....	....	....	12	5,000	416

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*Ventilation produced by the fan located at Summer Hill mine.
†Fire basket.
‡Fan under construction, but not yet in operation.
Note.—The quantity of air produced per each employe is calculated for the whole number of persons employed inside, but in nearly all machine mines, part of the men work at night.

General Condition of Mines in the District.

Operations on the Monongahela river, on the Wheeling Division of the Baltimore and Ohio Railroad, and on the West End Railroad.

There are fourteen mines in this division of the district, all of which have been in active operation during the year. I have been informed that the Venture mine located at Banksville is permanently abandoned, and that the coal still remaining will be recovered through the adjoining mines. There has been installed at the Lick Run mine a twenty-five inch Vulcan fan so that the ventilation is now first-class. At the Fair Haven mine a shaft has been sunk near the face of the main gangway about two miles distant from the mine entrance, which will be used as a main station for drainage and ventilation; a new ventilating fan and the necessary pumping machinery will be provided in the near future. I may state that all of the mines in this part of the district are now in reasonably good condition.

Moon Run and Montour Run Mines.

At these points four mines are located, namely Moon Run, Dickson, Margerum and Partridge. The moon Run mine, is a very large operation, and two fans and one ventilating furnace are used to produce the ventilation, one of the fans having been provided during this year. Three electric locomotives are in use to haul coal to the tipple. Both electricity and compressed air are used to operate the mining machines.

The Dickson mine is well supplied with ventilation, but the drainage at times is not of the best, the surface cover it light, and during the wet seasons large volumes of surface water penetrate through the broken strata into the mine, making it exceedingly difficult to keep the roadways properly drained at such times.

At the Margerum mine a 6-inch Clark fan has been installed to ventilate No. 2 section of workings; No. 1 section is ventilated by a furnace which will be replaced by a fan, after which the ventilation in all parts of the mine will be good.

At the Partridge mine a 16-foot Brazil fan has been installed, which will produce an abundance of air for several years to come.

Mines Located Along the Main Line of the Pan Handle Railroad.

There are sixteen mines in active operation in this part of the district, three of which are new operations. Two Capell fans have been installed during the year, one at the Bulger shaft and one at the Carnegie mine. In most instances the condition of the mines is satisfactory, but in some few cases there is room for improvement principally in the matter of drainage and ventilation, also in proper distribution of the air-currents through the workings.

The three new openings are Shaw No. 1 a drift mine located at Midway, Bulger shaft located at Bulger, and the Verner mine a slope opening also located at Bulger, all of which are in active course of development.

Operations on the Chartiers Valley and B. & M. Branches of the Pan Handle Railroad.

There are twenty mines in active operation in this division of the district. Two new openings, Midland Nos. 2 and 3, are in course of construction, and will be ready to ship coal in the near future. At Laurel Hill No. 2 mine a number of persons have been employed throughout the year cleaning up and repairing the roadways and working places, but no coal has been produced. At Mansfield No. 2 mine a small Capell fan has been installed to ventilate No. 1 section of the mine workings, and the other parts of the mine are to be ventilated by the large fan formerly used to ventilate the whole mine. This arrangement will probably increase the air volume upwards of twenty-five thousand cubic feet per minute, which should be sufficient for some time to come. An inlet air shaft is being sunk near the face of the workings, which will also add to the improvement in ventilation. A 16-foot Capell fan has been installed at the Summer Hill mine, which will also ventilate Nixon and Leasdale mines. I have not had an opportunity to measure the air volume since the fan was set in motion, but its capacity when driven to a reasonably safe speed should not fall short of two hundred and fifty thousand cubic feet per minute, provided the air-ways are maintained in good condition. A Capell fan 13.5 inches in diameter has been installed at Hazel mine and the same type of fan eleven feet in diameter has been installed at Midland No. 1 mine. I may say that all of the mines in this part of the district are now equipped with ample ventilating facilities, excepting Allison, Rich Hill and Katie, each of which will require more effective appliances in the near future.

P. C. & Y. R. R.

Eleven mines are being operated along the above railroad. The Beachmount mine when last inspected was in bad condition, the ventilation being inadequate. The second escape passage-way was found impassible by reason of water and roof falls, and the drainage seemed to receive no attention whatever, and to sum the matter up the place is simply a hole in the ground and not worthy to be called a mine. It had not been operated for several years until recently. There remains only a few acres of coal to be mined out, and about twenty-four persons are employed inside. I have taken action with a view to having the place put in legal condition. Federal No. 2 mine during the summer months was in an unsatisfactory condition, the ventilation not being properly conducted to the face of the entries, but on my last visit I noticed considerable improvement. It is also the intention to erect another furnace to ventilate the section of workings where the air currents were found inadequate.

A fan has been provided at O. I. C. mine and the air volume produced is now ample for all requirements. All of the other mines in this section are in reasonably fair condition.

Mines in the Neighborhood of Turtle Creek.

There are five mines in this region. Oak Hill Nos. 4 and 5, which were in satisfactory condition. The air volume in No. 4 is not as great as in some other mines, but very little blasting is done in mining, and the atmosphere in all parts of the workings was found pure and healthful, much more so than in some mines where the ventilation is more abundant, but is contaminated by large volumes of powder smoke.

The Duquesne mine when last inspected was not in good condition, the ventilation being sluggish. I requested the general manager to provide a new ventilating furnace and he promised that my request would be complied with.

The Ocean and Weinman mines are both small operations and seldom employ more than nine persons inside, except in the fall and winter seasons. Both mines were in reasonably good condition when last inspected.

Names of Persons Who Were Granted Certificates of Competency for Mine Foreman, and Dates When the Examinations were Held in the Seventh Bituminous District, 1885 to 1902 Inclusive.

Dates.	Names.
Nov. 25, 1885,	Thomas Gray.
	Wm. H. Wood.
	Henry Nicholson.
	Frank Cornell.
	John Watt.
	Thomas Miller.
	Samuel Kinsey.
	James D. McClean.
	Robert Smart.
	Ruben Street.
	John Stobie.
	Daniel Boden.
	Charles Wingeworth.
	David Allen.
	Fred. C. Keighley.
	John W. Davis.
	Wm. Coulson.
	Fred Rowe.
	Thomas Renshaw.
	John Bonner.
	Wm. Sheerin.
	Mathew Creevey.
	George Sutherin.
	Thomas Fowler.
March 2, 1886,	Jerry Dillon.
	C. P. Mayer.
	Wm. Beane.
	John McDonald.
	Joseph Cartright.
	Griffith Williams.
	James McGregor.
	George Archbold.
	Richard Archbold.
	John R. McBroome.
	John A. Hart.
	J. F. Anderson.
	Charles R. Trew.
	Wm. B. Marris.
	John Harris.
	Henry D. Thompson.
	John Nicholson.
	Charles Fereday.
	D. W. Phillips.
	H. W. O. Lett.
	John Brown.
	Thomas Burtoft.
	Thomas Matthews.
	John McGonegal.
	James McGonegal.
Jan. 11, 1887,	George J. Burns.
	George Volkert.
	James Reid.
	John J. Duncan.
	Wm. H. Ambler.
	George Bell.
	David Young.
	William Duncan.
	John B. Stone.
	Wm. W. Carter.
	Charles McGregor.
	John Patterson.
	Samuel Jones.
	John Usher.
	F. R. Morton.
	Wm. C. Gartley.
	Ernest Debuison.
	Charles Watson.
	Richard Rowley.
	Thomas Howell.
	Julius C. Esmiol.
	T. D. Stewart.
	John C. Werner.
Jan. 10, 1888,	Charles H. Dowling.
	Robert Nicholson.
	John Johnson.
	Austin King.
	Peter Watkinson.
	John D. Haydin.
	E. B. Davis.
	Martin C. Gray.
	James Bailey.
	A. C. Whyel.
Jan. 21, 1889,	G. Molsberger.
	John Walter.
	Stephen Arkwright.
	Walter O. Malley.
	Charles A. Wilhelm.
	Jacob Mayer.
	Henry C. Heath.
Jan. 14, 1890,	John T. Davidson.
	Peter Hormel.
	Wm. H. Linsley.
	John E. Hampson.
	Samuel McKinney.
	Robert Cochran.
	Victor Stampfly.
	James Collins.
	Wm. Johnson.
Dec. 2, 1890,	Matthew Heron.
	Thomas Harris.
	Thomas Ball.
	Wm. Chappell.
	Hugh McMurray.
	Paul Stinner.
	George Roebuck.
	Wm. J. Barker.
	James Browning.
	Frank Ransick.
	David Walters.
	Israel Morris.
	Robert Watson.
Jan. 26, 1892,	Wm. Jamison.
	John F. Mullooly.
	Joseph E. Wrightman.
	Wm. Guthrie.
	A. L. Knabe.
	George Robson.
	Samuel Shakespear.
	J. N. King.
	James Newman.
	John Keag.
	Allen Irvine.
Dec. 6, 1892,	Thomas Beadling.
	Reuben Booth.
	J. E. Mills.
	James Henderson.
	Thomas Smith.
	Ezra Cattley.
	H. L. Henderson.
	Alexander Cochran.
	Samuel A. Tomes.
Jan. 16, 1894,	James Clark.
	Charles K. McCaffrey.
	Simon P. McCaffrey.
	Michael McQuade.
	John A. Gregory.
	Wm. Langan.
	Wm. J. Neilson.
	E. W. Altman.
	Marth Keller.
	Edward O. Toole.
	James Painham.
	Hugh Dresher.
	Michael A. Roy.
	Robert Nelson.
	Robert Lightburn.
Jan. 22, 1895,	Charles Flint.
April 21, 1896,	Robert McKinney.
	David Brown.
	James Goustead.
	Henry Stype.
	Wm. Underwood.
	Adolph Hess.
	A. H. Yeats.
	John Simcock.
	David Watkins.
April 20, 1897,	David Thomas.
March 1, 1898,	Charles Wilhelm.
	W. S. Campbell.
	Wm. Gregory.
	Hugh Clark.
	James Rudge.
Jan. 24, 1899,	James T. Colburn.
	Thomas H. Thompson.
	Henry Cattley.
	C. P. Byrne.

Dates.	Names.	Dates.	Names.
Jan. 16, 1900,	E. R. Wise.		John S. Snyder.
	Joseph Lindon.		Edward Joyce.
	A. B. Henderson.		J. W. Meredith.
	Joseph E. Hodkiss.		Thomas F. Allsopp.
	Richard P. Berger.		Robert H. Heath.
	Chas. F. McKay.		Wm. E. Henderson.
	W. W. Pechar.		John Mahony.
Jan. 2, 3, 4, 1901,	John Scott Herron.		Charles P. Hensler.
	George Summers.		Wm. Lewis.
	James J. Croghan.		Robert Young.

Note.—In the year 1901 there were 65 applicants who attended the examination, 13 of whom were granted certificates for mine foreman and 23 for fire boss. There has not been any second grade certificates for mine foreman issued in this district. From 1885 up until 1897 the board of examiners was James Blick, Inspector; Roger Hartley, coal operator and Augustus Stinner, miner. After the death of Mr. Hartley, Daniel Boden, Superintendent, was appointed to fill the vacancy. This is the only change made in the board since its formation in 1885. The names of fire bosses are given on a separate list.

Name of Persons Granted Certificates to Act as Fire Boss Previous to the Act of 1893.

Names.

Thomas Fowler,
Mathew Creevey,
Frank Cornell,
Thomas Burtoft,
Dennis Wardley,
Thomas Gray,
John W. Davis,
Wm. Duncan,
Luke Creevey,
Alex. Thompson,
Francis Clark,
Fred. C. Keighley,
Jerry Dillon,
Wm. Coulson,
John Phillips,
Wm. Sheerin,
John Usher,
John McDonald,
Chas. Fereday,
Samuel Kinsey,
Benj. Fereday,
Levi Ludwick,
Wm. Carmichael,
Harry O. Lett,
Thomas L. Williams,
Julius Esmiol,
Fred. Rowe,
Daniel Boden,
Reuben Street,
John Patterson,
Griffith Williams,
Wm. Broadhead,
James Winter,
James Pollock,
Robert Grant,
Thomas Renshaw,
James Reid,
James Browning,
George Toward,
James Clark,
Thomas Grafton,
Thomas T. Evans,
Peter Murray,
John Matheson,
John Neish,
John McClean,
Charles Dowling,
Dominic McGreedy,
Chas. Warner,
David Young,
Wm. W. Carter,
John Stobie,
Adam L. Knabe,
Joseph Roadham,
John Donaldson,
James Charlesworth,
David Allen,
Thomas Miller,
John C. Kyte,
John B. Stone,
Peter Watkins,
G. H. Owens,
George Lowther,
Robert Nicholson,
Chas. Flint,
John E. Brown,
Walter O. Molley,
George H. Davis,

Names.

Peter Hensler,
Wm. Holloway,
Thomas Juinn,
James Connell,
Ruben Booth,
Francis Ransick,
James Furrie,
Samuel Wilkins,
James F. Cook,
Benjamin Lake,
Robert Beadling,
John Burt,
John T. Davidson,
Edward O. Toole,
John Clapperton,
Thomas Ball,
Robert Watson,
George Volkert,
Joseph Gartley,
James Parkinson,
Joseph Fielding,
Wm. Gregory,
James Collins,
Israel Morris,
Richard Dillon,
Thomas Martin,
John Case,
John Richards,
Wm. Sedden,
John McGregor,
George Watson,
Mathew Herron,
Alexander Patrick,
Wm. Parnham,
Jonathan Winter,
George Robson,
Wm. D. Sharp,
James Parnham,
Ezra Cattley,
John E. Hampson,
Frank Surtees,
James Connelly,
John King,
James Walker,
Allen Irvine,
Hugh McMurray,
A. T. Werner,
Robert Lightburn,
Wm. Morris,
Andrew Thorp,
Thomas J. Price,
John Keay,
Solomon Stroup,
Simon McCaffrey,
J. A. Gregory,
Wm. Strauss,
Daniel McCullough,
Harry Willis,
Wm. Naylor,
Henry Cattley,
Constantine McGregor,
Terrance Kelley,
John R. Brennan,
Simeon Ball,
Ralph Bell,
Frank Jackson,
James B. Riley,
Wm. Langan,

Names.

A. Yeats,
Daniel Watkins,
James Rudge,
Edward Joyce,
Thomas Perry,
Wm. Underwood,
John S. W. Snyder,
Nicholas Brocker,
Thomas Hancock,
Michael McQuade,
Thomas Keenlyside,
Harry Neal,
John Young,
David Brown,
W. J. Neilson,
Wm. E. Hampson,
Michael A. Roy,
Andrew Boa,
Patrick Halloran,
Joseph Young,
Edward H. Speakman,
George Cattley,
John Jasper,
Thomas Goody,
Moses Morgan,
John Phythyon,
Henry Stype,
Wm. Grant,
Thomas Hancock,
Robert Wild,
James Boustook,
Robert McKenney,
Frank P. Manck,
John Fleming,
David Martin,
David Thomas,
Charles P. Byrne,
W. W. Laughlin,
Charles Wilhelm,
James McGibbeny,
A. A. Hess,
John Simcock
Joseph E. Hodgkiss,
Thomas D. Smith,
Joseph Tomlinson,
Wm. Lewis,
Richard Maize,
Joseph A. Gordon,
John Faulds,
Richard P. Berger,
W. W. Pechar,
John Humphreys,
Eli Cattley,
Thomas H. Thompson,
Wm. Pope,
James T. Colburn,
George Wilson,
Walter Wilson,
W. S. Campbell,
James W. Meredith,
Thomas F. Allsopp,
James J. Groghan,
Wm. Drennan,
Chas. McKay,
George Atkins,
A. B. Henderson,
Joseph Lindon,
J. Scott Herron,

Names.

Howard C. Hutton,
John Fulton,
Albert Rudge,
H. W. McGibbeny,
Wm. Phillips,
George H. Summers,
Evan Davis,
John Clapperton,
Wm. E. Henderson,
John Mahony,
Chas. P. Hensler,
Leon Randour,
Harry Evans,
Thomas Thomas,
Thomas Cox,
John Herron,
Joseph Travis,
Joseph Hofrichter,
Robert Taylor,
John North,
John Rafferty,
John Trigger,
Wm. M. Kelvington,
Richard Maize,
Wm. Hampson,
Leonard Hoyland,
Wm. Welsh,
John Harley,
John Humpage,
Uriah Bellingham,
Joseph McGill,
John O'Kerr,
T. M. Smith,
Ugene S. Wade,
Benjamin Johnson,
Samuel T. Oldham,
Charles E. Craig,
Wm. H. James,
G. W. Boden,
Charles Johnson,
John R. Conley,
James Adamson,
John K. Davis,
Lowrie Wirtz,
James Maize,
Henry Kohl,
George Waugh,
Thomas Silcox,
Robert Howard,
John L. Moynagh,
W. D. Johnson,
Michael Welsh,
Stephen Jones,
George Smith,
M. H. McMillan,
Thomas Wardle.
Robert Thompson,
Calin McLay,
Daniel McKay,
Joseph Civer,
William Elliott,
Jeremiah Johnston,....
George H. Smith,
Arthur Hampson,
John Morris,
Abraham Marriott,
Frank Morgan,
George W. Warring,
Chas. E. Johnson.

Note.—The above list includes the names of all persons granted certificates to act as fire bosses in the Seventh Bituminous District from the year 1885 up to and including the examination held January 21, 22 and 23, 1902.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and location of collieries in the Seventh Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Pittsburg Coal Co.						
Moon Run,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	P. Y. Cox,	Moon Run,	P. & L. E.
First Pool No. 1,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Matthew Dixon,	Willock,	B. & O.
First Pool No. 2,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Matthew Dixon,	Willock,	B. & O.
Jumbo,	Washington,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Benj. Fereday,	McDonald,	P., C., C. & St. L.
Brier Hill,	Washington,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Benj. Fereday,	McDonald,	P., C., C. & St. L.
Nickel Plate,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Benj. Fereday,	McDonald,	P., C., C. & St. L.
Laurel Hill No. 1,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Benj. Fereday,	McDonald,	P., C., C. & St. L.
Laurel Hill No. 2,	Washington,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Benj. Fereday,	McDonald,	P., C., C. & St. L.
Champion,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Benj. Fereday,	McDonald,	P., C., C. & St. L.
Oak Ridge,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	James J. Boyle,	Walker's Mills,	P., C., C. & St. L.
National,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	James J. Boyle,	Walker's Mills,	P., C., C. & St. L.
Cherry,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	James J. Boyle,	Walker's Mills,	P., C., C. & St. L.
Boyd,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	James J. Boyle,	Walker's Mills,	P., C., C. & St. L.
Fort Pitt,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	James J. Boyle,	Walker's Mills,	P., C., C. & St. L.
Grant,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.			P., C., C. & St. L.
Nixon,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	John F. Hoosack,	Woodville,	P., C., C. & St. L.
Leasdale,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	John F. Hoosack,		P., C., C. & St. L.
Summer Hill,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	John F. Hoosack,		P., C., C. & St. L.
Bower Hill,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	John F. Hoosack,		P., C., C. & St. L.
Bridgeville,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	John F. Hoosack,		P., C., C. & St. L.
Slope,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	John F. Hoosack,		P., C., C. & St. L.
Boon,	Washington,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Wm. A. Lockart,	Canonsburg,	P., C., C. & St. L.
Allison,	Washington,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Wm. A. Lockart,	Canonsburg,	P., C., C. & St. L.
Morgan,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Chas. Fereday,	Cecil,	P., C., C. & St. L.
Vulcan,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Chas. Fereday,	Cecil,	P., C., C. & St. L.
Laurel Hill No. 5,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Chas. Fereday,	Cecil,	P., C., C. & St. L.
Creedmore,	Washington,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Chas. Fereday,	Cecil,	P., C., C. & St. L.
Ridgeway,	Washington,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Chas. Fereday,	Cecil,	P., C., C. & St. L.
Pan Handle,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Wm. H. Linsley,	Borland,	P., C. & Y.
Essen No. 1,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Wm. H. Linsley,	Borland,	P., C. & Y.
Harrison,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Wm. H. Linsley,	Borland,	P., C. & Y.
Lake Superior,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Wm. Herbertson,	Federal,	P., C. & Y.
O. I. C.,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Wm. Herbertson,	Federal,	P., C. & Y.
Essen No. 2,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Wm. Herbertson,	Federal,	P., C. & Y.
Essen No. 3,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Wm. Herbertson,	Federal,	P., C. & Y.
Federal No. 2,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Wm. Herbertson,	Federal,	P., C. & Y.
Dickson,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	W. C. Murray,	Imperial,	M. T. R. R.
Margerum,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	W. C. Murray,	Imperial,	M. T. R. R.

Partridge,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	W. C. Murray,	Imperial,	M. T. R. R.
Hartley & Marshall,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	F. M. Fritchman,	Banksville,	West End R. R.
Fair Haven,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	P. J. Keeling,	So. Side, Pittsburg,	
Lick Run,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	W. B. McCoy,	Finleyville,	B. & O.
New York and Cleveland Gas Coal Co.						
Oak Hill No. 4,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	W. F. Craig,	Turtle Creek,	P., B. & L. E.
Oak Hill No. 5,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	Hugh Dunning,	Unity,	P., B. & L. E.
Duquesne,	Allegheny,	G. W. Schluederberg,	Hussey Bldg., Pbg.	R. Green,	Edgewood Park,	P. R. R.
Monongahela River C. C. & C. Co.						
Becks Run,	Allegheny,	O. A. Blackburn,	Pittsburg,	B. M. Thomas,	Redman Mills,	River.
Walton,	Allegheny,	O. A. Blackburn,	Pittsburg,	John M. Kapp,	Redman Mills,	River.
Hays Street Run,	Allegheny,	O. A. Blackburn,	Pittsburg,	Wm. Fillabom,	Hope Church,	River.
Midland Coal Co.						
Midland Nos. 1, 2 and 3,	Washington,	A. C. Munhall,	Pittsburg,	S. H. Blair,	Houston,	P., C., C. & St. L.
Mansfield C. and C. Co.						
Mansfield No. 2,	Allegheny,			Daniel Boden,	Carnegie,	P., C., C. & St. L.
Pittsburg and Buffalo Co.						
Hazel,	Washington,	David G. Jones,	Canonsburg,	David G. Jones,	Canonsburg,	P., C., C. & St. L.
Meadow Lands Coal Co.						
Meadow Lands,	Washington,	W. L. Dixon,	Pittsburg,	Alex. McLean,	Meadow Lands,	P., C., C. & St. L.
J. V. H. Cook & Sons.						
Rich Hill,	Washington,			R. M. Cook,	Meadow Lands,	P., C., C. & St. L.
Amyville-Youghiogheny Gas Coal Co.						
Katie,	Allegheny,	J. B. Stone,	Suterville,	H. W. Mackintosh,	Bridgeville,	P., C., C. & St. L.
Pan Handle Mining Co.						
Blyth,	Allegheny,	John Blyth,	Pittsburg,			P., C., C. & St. L.
Carnegie Coal Co.						
Carnegie,	Allegheny,	R. P. Burgan,	Carnegie,			P., C., C. & St. L.
Mankedick Coal Co.						
Pine Ridge,	Allegheny,		Oakdale Station,			P., C., C. & St. L.
Shaw Coal Co.						
Shaw,	Washington,	John F. Atcheson,	Pittsburg,	David Brown,	Midway,	P., C., C. & St. L.
Verner Coal and Coke Co.						
Verner,	Washington,	Thomas Beadling,	Carnegie,	Thomas Gray,	Carnegie,	P., C., C. & St. L.
Bulger Block Coal Co.						
Bulger,	Washington,					P., C., C. & St. L.

TABLE I--Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Chartiers Coal and Coke Co. Hickman,	Allegheny,	J. T. M. Stoneroad,	Carnegie,	Wm. Neilson,	Federal,	P. C. & Y.
Witch Hazel Coal Co. Witch Hazel,	Allegheny,	David Jacob,	Beadling,			P. C. & Y.
P. F. Hormel. Beachmount,	Allegheny,	P. F. Hormel,	Hickman,	E. J. Lewis,	Hickman,	P. C. & Y.
Thomas Fox Estate. Fox,	Allegheny,	J. T. Fox,	West End, Pittsb'g,	J. T. Fox,	West End, Pittsb'g	
Pittsburg and Castle Shannon R. R. Co. Castle Shannon,	Allegheny,	James M. Bailey,	S. Side, Pittsburg,	E. J. Reamer,	So. Side, Pittsburg,	P. & C. S.
Harrison Gas Coal Co. Streets Run,	Allegheny,			Wm. L. Nancarrow	Hope Church,	P. R. R.
W. S. B. Hays. Calhoon,	Allegheny,	L. O. Hays,	Homestead,	L. O. Hays,	Homestead,	
G. W. Kramer. Bellwood,	Allegheny,	George W. Kramer,	Homestead,			
Weinman Bros. Weinman,	Allegheny,	Jacob Weinman,	Wilkinsburg,	Jacob Weinman,	Wilkinsburg,	
G. Vogele. Ocean,	Allegheny,	G. Vogele,	Station D, Pitts'bg,	G. Vogele,	Station D, Pittsb'g,	
Mount Oliver Coal and Stone Co. Rankin,	Allegheny,	G. H. Rankin,	Pittsburg,			

TABLE II—Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Seventh Bituminous District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Pittsburg Coal Co.												
Moon Run,	Allegheny,	388,203	6,433	1,790	396,426	270¾	484	....	1	....	270	28
First Pool No. 1,	Allegheny,	517,206	6,066	2,046	525,318	288¼	365	1	2	1,500	250	30
First Pool No. 2,	Allegheny,	....	....	....	....	251½	265	....	4	1,500	350	28
Jumbo,	Washington,	181,366	10,377	542	192,285	201¾	354	1	....	110	50	24
Brier Hill,	Washington,	147,977	1,640	717	150,334	229	206	....	....	110	25	18
Nickel Plate,	Allegheny,	96,514	3,456	758	100,728	224½	145	2	....	60	25	17
Laurel Hill No. 1,	Allegheny,	182,638	4,438	938	188,014	226¾	228	....	....	110	100	25
Laurel Hill No. 2,	Washington,	113	....	106	219	297	26	....	1	10	200	1
Champion,	Allegheny,	179,553	5,281	1,078	185,912	241¼	200	1	4	110	100	22
National,	Allegheny,	29,870	435	....	29,805	238½	75	....	....	....	....	6
Oak Ridge,	Allegheny,	74,339	1,645	222	76,206	219¼	71	....	....	....	....	8
Cherry,	Allegheny,	100,547	842	62	101,451	235¼	109	1	1	....	....	8
Boyd,	Allegheny,	63,571	691	525	64,790	200¾	95	....	7	....	....	10
Fort Pitt,	Allegheny,	65,497	949	6	66,452	150¼	132	....	....	....	....	10
Grant,	Allegheny,	5,628	141	698	6,467	173	31	....	....	50	25	5
Nixon,	Allegheny,	190,700	1,992	599	193,291	228¾	175	4	5	500	....	16
Leasdale,	Allegheny,	90,834	491	197	91,522	187¾	107	....	2	225	100	9
Summer Hill,	Allegheny,	196,370	1,516	147	198,033	209	189	....	....	500	....	16
Bower Hill,	Allegheny,	76,911	885	333	78,129	151¾	121	1	1	250	....	9
Bridgeville,	Allegheny,	116,090	1,829	521	118,440	155	162	....	2	480	50	14
Slope,	Allegheny,	10,288	992	39	11,319	308	21	....	....	150	....	2
Beon,	Washington,	109,117	1,033	450	110,600	213¾	116	....	1	175	....	11
Allison,	Washington,	117,365	238	202	117,805	211¼	187	1	....	100	....	15
Morgan,	Allegheny,	114,676	1,591	716	116,983	201½	158	1	2	535	8	11
Vulcan,	Allegheny,	217,721	2,801	502	221,027	184½	230	1	3	800	100	13
Laurel Hill No. 5,	Allegheny,	174,493	1,921	878	177,292	212¾	213	....	1	400	70	21
Creedmore,	Washington,	99,438	4,460	1,042	104,940	150	192	1	2	470	50	15

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Ridgway,	Washington,	89,425	2,333	1,889	93,647	128½	178	....	1	490	50	17
Pan Handle,	Allegheny,	72,409	4,005	31	76,445	139¾	122	1	2	150	75	12
Essen No. 1,	Allegheny,	160,669	1,877	314	162,860	213¼	167	1	4	500	....	12
Harrison,	Allegheny,	149,061	3,040	1,263	153,364	209¼	173	1	....	550	200	9
Lake Superior,	Allegheny,	93,814	1,314	215	95,343	142½	142	1	1	320	....	8
O. I. C.,	Allegheny,	48,047	191	295	48,533	144	84	1	1	175	....	6
Essen No. 2,	Allegheny,	162,924	1,663	140	164,727	188¼	157	1	1	600	50	10
Essen No. 3,	Allegheny,	46,741	2,397	84	49,222	112½	74	....	1	200	50	6
Federal No. 2,	Allegheny,	64,422	2,036	110	66,568	176¾	79	....	2	210	....	7
Dickson,	Allegheny,	130,088	3,314	556	133,958	196½	134	....	....	....	....	18
Margerum,	Allegheny,	94,023	168	408	94,599	216¼	127	1	....	....	....	15
Partridge,	Allegheny,	148,466	1,974	448	150,888	216	152	1	1	....	....	25
Hartley & Marshall,	Allegheny,	175,215	2,318	1,019	178,552	251¾	227	1	....	800	50	18
Fair Haven,	Allegheny,	144,118	4.286	520	148,924	289	171	1	1	....	....	14
Lick Run,	Allegheny,	47,431	245	634	48,310	158½	122	1	....	409	200	13
Total,		5,173,381	93,207	23,040	5,289,628	203.44	6,766	26	54	12,549	2,408	582
New York and Cleveland Gas Coal Co.												
Oak Hill No. 4,	Allegheny,	347,304	2,124	825	350,253	287¾	378	1	1	....	....	27
Oak Hill No. 5,	Allegheny,	290,751	717	22	291,490	244	302	....	....	....	....	16
Duquesne,	Allegheny,	131,907	769	744	133,420	282½	213	....	1	....	....	17
Total,		769,962	3,610	1,591	775,163	280.4	893	1	2	....	....	60
Monongahela River C. C. & C. Co.												
Becks Run,	Allegheny,	119,359	1,715	949	152,023	189	276	1	....	2	....	17
Walton,	Allegheny,	204,633	1,445	395	206,473	255	245	....	1	200	....	23
Hays Street Run,	Allegheny,	160,182	410	82	160,674	198	264	....	....	400	....	18
Total,		514,174	3,570	1,426	519,170	213	785	1	1	602	....	58

Recapitulation.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Pittsburg Coal Co.,	Alle'y & Wash.,	5,173,381	93,207	23,040	5,289,628	268.44	6,766	26	54	12,549	2,408	582
New York and Cleveland Gas Coal Co.,	Allegheny,	769,962	3,610	1,591	775,163	271.4	893	1	2			60
Monongahela River C. C. & C. Co.,	Allegheny,	514,174	3,570	1,426	519,170	213	785	1	1	602		58
Midland Coal Co.,	Washington,	202,085	3,000	400	205,485	210	310		2			26
Mansfield Coal and Coke Co.,	Allegheny,	440,034	2,200	1,400	443,634	276½	396	2	4			26
Pittsburg and Buffalo Co.,	Washington,	168,643	2,000	1,031	171,674	290	254	2	3			10
Meadow Lands Coal Co.,	Washington,	35,748	75	25	35,848	94¾	100			40	25	5
J. V. H. Cook & Sons,	Washington,	23,267	243	91	23,601	120	47			40	100	3
Amyville-Youghiogheny Gas Coal Co.,	Allegheny,	26,530	600	200	27,330	300	53			312	50	6
Pan Handle Mining Co.,	Allegheny,	53,583	724		54,307	241¾	53		2			5
Carnegie Coal Co.,	Allegheny,	184,000	1,800		185,800	249¾	230	1				15
Mankedick Coal Co.,	Allegheny,	70,000			70,000	256¼	108					9
Shaw Coal Co.,	Washington,	33,518	50	100	33,668	121	170		1			9
Verner Coal and Coke Co.,	Washington,	3,766			3,766	64	26					2
Bulger Block Coal Co.,	Washington,	15,800	200		16,000	234	42					2
Chartiers Coal and Coke Co.,	Allegheny,	17,400			17,400	262	25			50		3
Witch Hazel Coal Co.,	Allegheny,	109,366	878		110,244	248	149	1	2			6
P. F. Hornel,	Allegheny,	11,048		44	11,092	177	28					3
Thomas Fox Estate,	Allegheny,		119	10,890	11,009	161	19					2
Pittsburg and Castle Shannon Railroad Co.,	Allegheny,			111,010	111,010	280½	134	1	2			18
Harrison Gas Coal Co.,	Allegheny,	55,522	1,016	165	56,703	301¾	61					3
W. S. B. Hays,	Allegheny,			9,228	8,555	312	14					1
G. W. Kramer,	Allegheny,		50	15,000	15,050	297	28					2
Weinman Bros.,	Allegheny,			15,842	15,842	267	26					3
G. Vogele,	Allegheny,		19	6,707	6,726	288	22					2
Mount Oliver Coal and Stone Co.,	Allegheny,		300	7,700	8,000	282	19					2
Total,		7,907,827	113,661	205,890	8,226,705	*231.9	10,758	35	73	13,593	2,583	863

*Average.

TABLE II—Continued.

Names of Operators.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Pittsburg Coal Co.,	Alle'y & Wash.,	19	798	121	13,238	14,036	2	2	23	122	13,966	58	11,064	9,039	28	25
New York and Cleveland Gas Coal Co.,	Allegheny,	2	200			200	5			5	310					
Monongahela River C. C. & Co. Co.,	Allegheny,	5	380	5	375	755	2		1	7	300	3	600	300	1	
Midland Coal Co.,	Washington,			3	375	375				4	150	3				2
Mansfield Coal and Coke Co.,	Allegheny,			3	375	375	1		3	4	1,100	2	350	100	2	
Pittsburg and Buffalo Co.,	Washington,			4	600	600			2	6	660	1			2	
Meadow Lands Coal Co.,	Washington,			1	160	160				2	160					1
J. V. H. Cook & Sons,	Washington,			1	125	125				1	60	1	60	20		
Amyville-Youghiogheny Gas Coal Co.,	Allegheny,			2	250	250				2	200	1	80	10	1	
Pan Handle Mining Co.,	Allegheny,			2	250	250				2	225	1			1	
Carnegie Coal Co.,	Allegheny,			2	200	200			1	2	300	2			1	
Mankedick Coal Co.,	Allegheny,															
Shaw Coal Co.,	Washington,			1	100	100	2									
Verner Coal and Coke Co.,	Washington,			2	300	300				1	100	2				1
Bulger Block Coal Co.,	Washington,			2						3		1				1
Chartiers Coal and Coke Co.,	Allegheny,															
Witch Hazel Coal Co.,	Allegheny,	2	175	1	125	300				2	250	1	200			1
P. F. Hormel,	Allegheny,															
Thomas Fox Estate,	Allegheny,	1	50			50				2	40	2	80	80		
Pittsburg and Castle Shannon R. R. Co.,	Allegheny,											1	90	90		
Harrison Gas Coal Co.,	Allegheny,			1	60	60				1	60					
W. S. B. Hays,	Allegheny,															
G. W. Kramer,	Allegheny,						1									
Weinman Bros.,	Allegheny,															
G. Vogele,	Allegheny,															
Mount Oliver Coal and Stone Co.,	Allegheny,	1	50			50				1	50	1				
Total,		30	1,653	151	16,533	18,186	13	2	30	167	17,931	80	12,524	9,639	37	30

TABLE III—Showing the number of each class of employes at each colliery in the Seventh Bituminous District during the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Pittsburg Coal Co.																	
Moon Run,	Allegheny,	1	3	349	......	22	4	39	418	1	9	7	2	2	45	66	484
First Pool No. 1,	Allegheny,	1	2	265	5	23	4	13	313	3	5	9	1	5	29	52	365
First Pool No. 2,	Allegheny,	1	2	190	10	20	3	21	247	1	2	3	1	......	11	18	265
Jumbo,	Washington,	1	3	250	4	29	3	20	310	1	5	12	......	2	24	44	354
Brier Hill,	Washington,	1	2	150	......	20	4	14	191	1	3	2	......	1	8	15	206
Nickel Plate,	Allegheny,	1	1	105	......	14	1	8	130	1	3	4	......	1	6	15	145
Laurel Hill No. 1,	Allegheny,	1	4	140	......	18	4	32	199	1	5	6	......	2	15	29	228
Laurel Hill No. 2,	Washington,	1	......	......	9	......	......	......	10	......	3	2	......	1	10	16	26
Champion,	Allegheny,	1	1	132	......	17	3	22	176	1	4	9	......	1	9	24	200
National,	Allegheny,	1	1	50	......	7	......	7	66	......	2	1	......	1	5	9	75
Oak Ridge,	Allegheny,	1	1	50	......	6	......	3	61	......	1	3	......	1	5	10	71
Cherry,	Allegheny,	1	......	85	......	7	1	4	98	......	2	2	1	1	5	11	109
Boyd,	Allegheny,	1	1	68	......	8	2	5	85	......	2	2	......	1	5	10	95
Fort Pitt,	Allegheny,	1	......	100	......	9	2	5	117	......	2	2	1	1	9	15	132
Grant,	Allegheny,	1	......	20	......	3	......	1	25	1	1	2	......	......		6	31
Nixon,	Allegheny,	1	2	130	......	16	......	6	156	1	3	3	......	2	10	19	175
Leasdale,	Allegheny,	1	1	80	......	10	1	2	95	1	2	1	1	1	6	12	107
Summer Hill,	Allegheny,	1	2	140	......	17	2	7	169	1	3	3	1	2	10	20	189
Bower Hill,	Allegheny,	1	1	90	......	9	1	7	109	1	2	2	......	1	6	12	121
Bridgeville,	Allegheny,	1	2	120	......	14	......	7	144	1	4	3	......	1	9	18	162
Slope,	Allegheny,	1	......	12	3	2	......	......	18	......	1	2	......	......	......	3	21
Boon,	Washington,	1	1	85	......	11	2	3	103	......	2	3	......	1	7	13	116
Allison,	Washington,	1	......	160	......	13	......	3	177	......	2	......	......	1	7	10	187
Morgan,	Allegheny,	1	1	122	2	10	4	3	143	......	2	3	......	1	9	15	158
Vulcan,	Allegheny,	1	2	146	16	29	4	8	206	......	7	2	......	1	14	24	230
Laurel Hill No. 5,	Allegheny,	1	2	130	......	17	7	34	191	......	8	6	......	1	7	22	213

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	Grand total, inside and outside.
Creedmoore,	Washington,	1	2	140	......	12	5	13	173	......	4	5	......	2	8	19	192
Ridgeway,	Washington,	1	2	100	......	15	5	13	146	......	7	6	......	1	18	32	178
Pan Handle,	Allegheny,	1	2	89	......	10	1	4	107	......	3	3	......	2	7	15	122
Essen No. 1,	Allegheny,	1	2	120	......	12	3	14	152	......	4	3	......	1	7	15	167
Harrison,	Allegheny,	1	2	132	......	8	2	9	154	......	4	4	......	1	10	19	173
Lake Superior,	Allegheny,	1	2	102	2	8	3	7	125	......	2	2	......	1	12	17	142
O. I. C.,	Allegheny,	1	......	70	1	6	1	2	81	......	1	......	......	......	2	3	84
Essen No. 2,	Allegheny,	1	2	108	2	14	3	4	134	......	2	2	......	......	19	23	157
Essen No. 3,	Allegheny,	1	1	50	4	8	1	......	65	......	1	4	......	4	......	9	74
Federal No. 2,	Allegheny,	1	......	60	2	8	3	2	76	......	1	2	......	......	......	3	79
Dickson,	Allegheny,	1	......	80	......	15	3	12	111	......	3	4	......	2	14	23	134
Margerum,	Allegheny,	1	......	82	......	12	3	13	111	......	3	......	......	1	12	16	127
Partridge,	Allegheny,	1	......	99	......	18	5	12	135	......	4	3	......	1	9	17	152
Hartley & Marshall,	Allegheny,	1	3	175	......	13	2	9	203	......	4	6	......	2	12	24	227
Fair Haven,	Allegheny,	1	2	98	4	14	1	19	139	1	5	7	......	2	17	32	171
Lick Run,	Allegheny,	1	1	82	......	8	3	5	100	......	2	3	......	1	16	22	122
Total,		42	57	4,766	64	532	96	412	5,969	17	135	148	8	53	436	797	6,766
New York and Cleveland Gas Coal Co.																	
Oak Hill No. 4,	Allegheny,	1	......	287	9	23	10	......	330	......	3	5	......	2	38	48	378
Oak Hill No. 5,	Allegheny,	1	......	257	10	12	7	......	287	......	2	2	......	2	9	15	302
Duquesne,	Allegheny,	1	......	167	10	8	4	......	190	......	2	4	......	2	15	23	213
Total,		3	......	711	29	43	21	......	807	......	7	11	......	6	62	86	893

Monongahela River C. C. & C Co.																	
Becks Run,	Allegheny,	1	1	208	......	16	1	10	237	.....	5	4	......	2	28	39	276
Walton,	Allegheny,	1	2	190	......	17	1	9	220	......	3	5	......	2	15	25	245
Hays Street Run,	Allegheny,	2	......	197	......	11	4	16	230	......	2	2	......	2	28	34	264
Total,		4	3	595	......	44	6	35	687	......	10	11	......	6	71	98	785
Midland Coal Co.																	
Midland,	Washington,	1	......	260	6	19	2	......	288	1	3	4	3	1	10	22	310
Mansfield Coal and Coke Co.																	
Mansfield No. 2,	Allegheny,	1	4	295	......	14	1	47	362	......	13	3	......	2	16	34	396
Pittsburg and Buffalo Co.																	
Hazel,	Washington,	1	2	162	15	18	......	23	221	1	6	3	......	4	19	33	254
Meadow Lands Coal Co.																	
Meadow Lands,	Washington,	1	......	75	......	5	......	5	86	......	2	2	......	2	8	14	100
J. V. H. Cook & Sons.																	
Rich Hill,	Washington,	1	......	35	1	2	......	3	42	......	1	1	......	1	2	5	47
Amyville-Youghiogheny Gas Coal Co.																	
Katie,	Allegheny,	1	......	30	1	7	2	4	45	......	1	3	......	1	3	8	53
Pan Handle Mining Co.																	
Blyth,	Allegheny,	1	......	35	1	3	3	1	41	1	1	2	......	1	4	9	53
Carnegie Coal Co.																	
Carnegie,	Allegheny,	1	1	185	......	10	3	5	205	1	2	2	......	4	16	25	230
Verner Coal and Coke Co.																	
Verner,	Washington,	1	1	15	......	1	......	......	18	......	1	2	......	3	2	8	26
Shaw Coal Co.																	
Shaw No. 1,	Washington,	1	1	130	......	9	5	3	149	1	3	5	......	2	10	21	170
Bulger Block Coal Co.																	
Bulger,	Washington,	1	......	30	......	2	......	2	35	......	1	2	......	1	3	7	42
Chartiers Coal and Coke Co.																	
Hickman,	Allegheny,	1	......	20	......	2	1	......	24	......	......	......	......	......	1	1	25
Witch Hazel Coal Co.																	
Witch Hazel,	Allegheny,	1	1	125	1	7	1	......	136	1	2	3	1	1	5	13	149
P. F. Hormel.																	
Beachmount,	Allegheny,	1	......	22	......	2	1	1	27	1	......	......	......	......	......	1	28
Thomas Fox Estate.																	
Fox,	Allegheny,	1	......	15	......	1	......	......	17	1	......	1	......	......	......	2	19

TABLE III--Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
P. & C. S. R. R. Co. Castle Shannon,	Allegheny,	1	......	110	4	9	......	......	124	......	1	......	......	......	9	10	134
Harrison Gas Coal Co. Streets Run,	Allegheny,	1	......	48	1	3	1	1	55	......	1	1	......	1	3	6	61
W. S. B. Hays. Calhoon,	Allegheny,	1	......	8	......	1	......	1	11	......	......	......	......	2	1	3	14
G. W. Kramer. Bellwood,	Allegheny,	1	......	20	......	1	......	1	23	......	......	1	......	1	3	5	28
Weinman Bros. Weinman,	Allegheny,	1	......	23	......	2	......	......	26	......	......	......	......	......	......	......	26
G. Vogele. Ocean,	Allegheny,	1	......	10	......	1	......	......	12	1	......	......	......	2	7	10	22
Mount Oliver Coal and Stone Co. Rankin,	Allegheny,	......	......	15	......	2	......	......	17	......	......	1	......	......	1	2	19
Mankedick Coal Co. Pine Ridge,	Allegheny,	1	......	90	......	6	......	3	100	......	1	......	......	2	5	8	108
Grand total,		71	70	7 830	123	746	143	547	9,530	26	191	206	12	96	697	1,228	10,758

Recapitulation.

Names of Operators.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.							
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	Grand total inside and outside.
Pittsburg Coal Co.,	Alle'y & Wash.,	42	57	4,766	64	532	96	412	5,969	17	135	148	8	53	436	797	6,766
New York and Cleveland Gas Coal Co.,	Allegheny,	3	......	711	29	43	21	......	807	......	7	11	......	6	62	86	893
Monongahela River C. C. & C. Co.,	Allegheny,	4	3	595	......	44	6	35	687	......	10	11	......	6	71	98	785
Midland Coal Co.,	Washington,	1	......	260	6	19	2	......	288	1	3	4	3	1	10	22	310
Mansfield Coal and Coke Co.,	Allegheny,	1	4	295	......	14	1	47	362	......	13	3	......	2	16	34	396
Pittsburg and Buffalo Co.,	Washington,	1	2	162	15	18	......	23	221	1	6	3	......	4	19	33	254
Meadow Lands Coal Co.,	Washington,	1	......	75	......	5	......	5	86	......	2	2	......	2	8	14	100
J. V. H. Cook & Sons,	Washington,	1	......	35	1	2	......	3	42	......	1	1	......	1	2	5	47
Amyville-Youghiogheny Gas Coal Co.,	Allegheny,	1	......	30	1	7	2	4	45	......	1	3	......	1	3	8	53
Pan Handle Mining Co.,	Allegheny,	1	......	35	1	3	3	1	44	1	1	2	......	1	4	9	53
Carnegie Coal Co.,	Allegheny,	1	1	185	......	10	3	5	205	1	2	2	......	4	16	25	230
Mankedick Coal Co.,	Allegheny,	1	......	90	......	6	......	3	100	......	1	......	......	2	5	8	108
Shaw Coal Co.,	Washington,	1	1	130	......	9	5	3	149	1	3	5	......	2	10	21	170
Vernon Coal and Coke Co.,	Washington,	1	1	15	......	1	......	......	18	......	1	2	......	3	2	8	26
Bulger Block Coal Co.,	Washington,	1	......	30	......	2	......	2	35	......	1	2	......	1	3	7	42
Chartiers Coal and Coke Co.,	Allegheny,	1	......	20	......	2	1	......	24	......	......	......	......	......	1	1	25
Witch Hazel Coal Co.,	Allegheny,	1	1	125	1	7	1	......	136	1	2	3	1	1	5	13	149
P. F. Hormel,	Allegheny,	1	......	22	......	2	1	1	27	1	......	......	......	......	......	1	28
Thomas Fox Estate,	Allegheny,	1	......	15	......	1	......	......	17	1	......	1	......	......	......	2	19
P. & C. S. R. R. Co.,	Allegheny,	1	......	110	4	9	......	......	124	......	1	......	......	......	9	10	134
Harrison Gas Coal Co.,	Allegheny,	1	......	48	1	3	1	1	55	......	1	1	......	1	3	6	61
W. S. B. Hays,	Allegheny,	1	......	8	......	1	......	1	11	......	......	......	......	2	1	3	14
G. W. Kramer,	Allegheny,	1	......	20	......	1	......	1	23	......	......	1	......	1	3	5	28
Weinman Bros.,	Allegheny,	1	......	23	......	2	......	......	26	......	......	......	......	......	......	......	26
G. Voegle,	Allegheny,	1	......	10	......	1	......	......	12	1	......	......	......	2	7	10	22
Mount Oliver Coal and Stone Co.,	Allegheny,	......	......	15	......	2	......	......	17	......	......	1	......	......	1	2	19
Total,		71	70	7,830	123	746	143	547	9,530	26	191	206	12	96	697	1,228	10,758

TABLE III—Continued.

Names of Operators.	County.	Number of Days Worked in Each Month.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Pittsburg Coal Co.,	Alle'y & Wash.,	15.65	14.26	14.05	16.89	18.29	18.54	21.63	21.23	19.41	22.41	19.22	15.96	208
New York and Cleveland Gas Coal Co.,	Allegheny,	19.16	17.41	19.66	22.41	22.5	24	24.75	25.58	23.16	26.08	23.58	23.08	271¼
Monongahela River C. C. & C. Co.,	Allegheny,	20	15	20.33	21	24.33	21.33	22	25	17.5	20.33	23	20	214
Midland Coal Co.,	Washington,	18.5	16.5	14	16.5	25.5	21.5	22.25	15.75	14.5	15.25	14.5	15.25	210
Mansfield Coal and Coke Co.,	Allegheny,	18	21.75	19	23	24	24	25	25	22.5	27	25	22.25	276.50
Pittsburg and Buffalo Co.,	Washington,	24.75	22	26	24.5	24¾	25	24¾	23	23	24½	23½	24¼	290
Meadow Lands Coal Co.,	Washington,	....	....	....	....	....	7	9¾	12½	12	18¼	18¾	16½	94.75
J. V. H. Cook & Sons,	Washington,	....	....	11	13	15	14	15	11	11	11	10	9	120
Amyville-Youghiogheny Gas Coal Co.,	Allegheny,	25	25	25	25	25	25	25	25	26	24	25	25	300
Pan Handle Mining Co.,	Allegheny,	22	19	22	22	25	18¾	21¼	17	18¼	22½	15½	18½	241.75
Carnegie Coal Co.,	Allegheny,	19½	18	20	15	22¾	21	24¼	24½	22¾	23½	19	19¾	249.75
Mankedick Coal Co.,	Allegheny,	25¼	23¼	21	24¾	19½	21	19	24	20½	22	20	16	256.25
Shaw Coal Co.,	Washington,	....	....	....	....	....	3	20	18	22	19	17	22	121
Verner Coal and Coke Co.,	Washington,	....	....	....	....	....	....	....	....	5	21	17	21	64
Bulger Block Coal Co.,	Washington,	10	15	15	16	21	23	22	24	24	25	16	20	234
Chartiers Coal and Coke Co.,	Allegheny,	22	22	23	22	22	23	24	20	20	23	21	20	262
Witch Hazel Coal Co.,	Allegheny,	16	22	18	18	24	20	22	22	20	27	24	15	248
P. F. Hormel,	Allegheny,	....	....	....	22	21	25	17	20	18	18	16	20	177
Thomas Fox Estate,	Allegheny,	22	21	27	13	6	7	5	6	11	15	13	15	161
P. & C. S. R. R. Co.,	Allegheny,	24½	25	25	23	21	20	20½	20½	23	27	26	25	280.50
Harrison Gas Coal Co.,	Allegheny,	24½	22¼	25¾	24	27	24¾	24½	26½	23½	27	26	26	301.75
W. S. B. Hays,	Allegheny,	27	24	26	26	27	25	27	27	25	27	26	25	312
G. W. Kramer,	Allegheny,	25	24	25	25	26	24	25	25	24	25	25	24	297
Weinman Bros.,	Allegheny,	26	24	25	19	11	22	16	26	21	27	25	25	267
G. Voegle,	Allegheny,	26	23	26	25	26	25	20	19	24	25	24	25	288
Mount Oliver Coal and Stone Co.,	Allegheny,	25	23	25	24	23	24	20	20	24	25	25	24	282

TABLE IV—List of fatal accidents that occurred in and about the mines of the Seventh Bituminous District for the year ending December 31, 1901.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan. 5	Wm. Bently,	American,	Miner,	57	M.	1	....	Mansfield No. 2,	Allegheny,	Fatally injured by fall of slate in his room; he was taking the loose slate down and it fell upon him.
Feb. 7	Frank Maclevish,	Pole,	Miner,	33	M.	1	2	Mansfield No. 2,	Allegheny,	Fatally injured by fall of slate in his room; he was taking down coal and a piece of slate broke away from a free slip and fell upon him.
8	Patrick Dinnan,	Irish,	Miner,	49	M.	1	5	Witch Hazel,	Allegheny,	Killed by being struck by a car which broke away from the trip and ran back down the slope.
March 6	Frank Ayers,	American,	Miner boy,	15	....	....	....	Nickel Plate,	Allegheny,	Killed by fall of slate in a room; he was working with his father who knew the slate was unsafe.
20	Wm. Wherling,	German,	Driver,	57	M.	1	....	Beeks Run,	Allegheny,	Killed on the main parting; it is supposed the mule backed against him and crushed his body against the car, breaking his back; no one saw the accident.
April 19	Paul Speicher,	American,	Miner boy,	15	....	....	....	Nixon,	Allegheny,	Killed by fall of slate these persons, father and son, were working in a room, a piece of slate broke away from a free slip and fell upon them; one prop properly set would have prevented the accident.
19	Jacob Specher,	German,	Miner,	59	M.	1	4	Nixon,	Allegheny,	
May 7	Jacob Ammon,	German,	Miner,	53	S.	...	....	Castle Shannon,	Allegheny,	Killed by fall of coal in his room; the coal broke over a sprag to a clay seam and fell upon him while he was undermining.
18	Joseph Daniel,	Russian,	Miner,	38	S.	....	....	Cherry,	Allegheny,	Killed by fall of slate in his room; he neglected to set props.
24	Peter Sahavah	Pole,	Miner,	32	M.	1	4	Hazel,	Wash'ton,	Killed by electric shock; he came in contact with an electric wire on side of passageway.

TABLE IV——Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
June	5	Enoch Newman, ...	English, ...	Miner, ...	57	S.	....	....	Hartley & Marshall,...	Allegheny.	Killed by fall of slate in his room; the slate broke away from a free slip which could not be seen.
	7	George Popeck, ...	Austrian, ...	Miner, ...	43	M.	1	4	Carnegie, ...	Allegheny,	Killed by electric shock; he came in contact with an electric wire on side of passageway.
	18	Abraham Douglas, ...	American, ..	Miner boy, ...	14	....	....	....	Oak Hill No. 4, ...	Allegheny,	Killed by fall of coal in a room; he was working with his father, who failed to set sprags to the coal while undermining.
	19	Paul Sabulsky, ...	Russian, ...	Machine runner	26	S.	....	....	Vulcan, ...	Allegheny,	Killed by mining machine; he was caught by the cutter chain and his body drawn into the machinery.
July	15	Domie Mart, ...	Italian, ...	Miner, ...	55	M.	1	....	Allison, ...	Wash'ton,.	Killed by fall of slate in his room; the slate that fell was encircled by a free slip which could not be seen.
	16	Paul Valentine, ...	Italian, ...	Miner, ...	35	S.	....	....	Essen No. 1, ...	Allegheny,	Killed by fall of coal and slate in his room; he was undermining under a piece of loose coal and slate that he should have taken down.
	19	Wm. Kaminski, ...	Pole, ...	Miner, ...	48	M.	1	3	Hazel, ...	Wash'ton,.	Killed by fall of coal at face of an entry; he had fired a blast in the coal and was loading a car in front of the broken coal when it fell upon him.
	23	Henry Halley, ...	Irish, ...	Miner, ...	18	S.	....	....	Jumbo, ...	Wash'ton,.	Killed by fall of slate in a room. He knew the slate was unsafe, but risked his life rather than set props.
	31	Joseph Malick, ...	Slav, ...	Hooker on, ...	30	M.	1	1	Essen No. 2, ...	Allegheny,	Killed by being struck by a car which broke loose from trip and ran back down the slope.
Aug.	5	Henry A. Jacobs, ...	American, ..	Driver, ...	21	S.	....	....	Lake Superior, ...	Allegheny,	Fatally injured by being crushed between car and coal pillar; he was riding on front end of the car which ran against the side of passageway.

	14	Martin Shimnetzer, ...	German, ...	Miner, ...	34	M.	1	4	Harrison, ...	Allegheny,	Killed by fall of slate in his room; he failed to set a sufficient number of props.
Sept.	16	Joseph Ritter, ...	German, ...	Miner, ...	54	S.	....	....	Morgan, ...	Allegheny,	Fatally injured by fall of slate in his room; he was working under a piece of loose slate which he should have taken down.
	23	Leon Hornet, ...	French, ...	Miner, ...	19	S.	....	....	Nickel Plate, ...	Allegheny,	Killed by fall of slate in his room; he had driven a wedge over the loose slate, intending to take it down, and then went under it to work without setting props.
	26	Dominick Long, ...	Italian, ...	Miner, ...	25	S.	....	....	Partridge, ...	Allegheny,	Killed by fall of slate in his room; he was working under a piece of dangerous slate, and lost his life by failing to set props.
Oct.	10	George Schnkovich, ...	Pole, ...	Miner, ...	40	S.	....	....	Champion, ...	Allegheny,	Killed by fall of slate at face of his room; he had been warned of his danger by another miner.
	22	Mathew Schinkotz, ...	Slav, ...	Miner, ...	42	M.	1	5	Lick Run, ...	Allegheny,	Killed by fall of coal in his room; he had fired a blast in the coal and went under the broken coal to undermine it deeper, but did not set sprags.
	29	Thomas Mavercheck,..	Austrian, ...	Miner, ...	44	M.	1	....	O. I. C., ...	Allegheny,	Killed by fall of slate in his room; the danger could easily have been seen and the loose slate should have been taken down, as it could not have been propped with safety.
Nov.	7	Wm. J. Casey, ...	American, ..	Motor man, ...	30	S.	....	....	Nixon, ...	Allegheny,	Killed in a wreck on motor road. These two men were riding on the electric motor coming from the mine with a loaded trip. The motor collided with cars lost from a trip when going into the mine. The motorman was at fault in not giving proper attention to the signal carried in on the last car, and the mine officials were negligent in not enforcing strict discipline on the motor roads.
	7	Thomas Carmichal,....	American, ..	Road man, ...	51	M.	1	....	Nixon, ...	Allegheny,	
	20	Nickolas Kretch, ...	American, ..	Miner, ...	20	S.	....	....	Fair Haven, ...	Allegheny,	Killed by fall of roof in a room pillar; he was taking props out and removed the wrong props, and then went under the unsupported roof to remove the props, which should have been taken out first.
	20	Nickolas Balack, ...	Italian, ...	Miner, ...	34	M.	1	1	Pan Handle, ...	Allegheny,	Killed by fall of roof; he was taking out props in pillar workings and first removed the ones nearest the coal face which left no safe way of retreat while removing the back props.
	25	John Beachaj, ...	Austrian, ...	Miner, ...	28	S.	....	....	First Pool No. 1, ...	Allegheny,	Fatally injured by fall of slate in his room; he was working under a small piece of loose slate that he should have taken down.

TABLE IV—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Dec.	25	G. Joice,	Italian,	Miner,	52	M.	1	2	Margerum,	Allegheny,	Fatally injured by fall of slate in his room; the danger could have been detected and guarded against by ordinary care.
	12	John Phillips,,	Slav,	Miner,	28	S.	....	....	Creedmoor,	Wash'ton,.	Killed by fall of horse-back roof in his room; the roof was treacherous and full of slips, but if the victim had exercised proper care the accident could have been averted.
	17	Joseph Davis,	English,	Driver,	17	S.	....	....	Bower Hill,	Allegheny,	Killed by fall of slate in a room; he was loading coal and had set props, but the slate broke away from a free clay slip, throwing the props out.

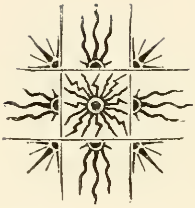
TABLE V—List of non-fatal accidents that occurred in and about the mines of the Seventh Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	3	Antonu Vindaney,	Slav,	Miner,	57	W.	Ridgeway,	Washington,	Leg broke by falling slate.
	4	Samuel Maze,	American,	Weighman,	20	S.	Hazel,	Washington,	Leg crushed, necessitating amputation; he attempted to get on car while it was in motion.
	5	Adam Wilds,	American,	Miner,	18	S.	Cherry,	Allegheny,	Body bruised and hip dislocated by falling slate.
	12	Emil Parue,	French,	Miner,	49	S.	Champion,	Allegheny,	Thigh broken by fall of slate.
	22	Wm. Grafanler,	French,	Miner,	22	S.	Essen No. 1,	Allegheny,	Back injured by fall of slate.
	22	Matthew Smith,	English,	Miner,	59	M.	Castle Shannon,	Allegheny,	Leg broken by fall of slate.
	24	James Scanlon,	American,	Driver,	39	M.	Witch Hazel,	Allegheny,	Injured by rock from a premature blast.
	30	Wm. Clark,	Scotch,	Miner,	17	S.	Duquesne,	Allegheny,	Bruised about body by a fall of coal.
Feb.	14	Harry Sheppard,	American,	Miner,	29	M.	Hazel,	Washington,	Foot crushed, necessitating amputation; caught in mining machine.
March	4	Morris Camtaral,	French,	Machine runner	26	S.	Midland No. 1,	Washington,	Arm fractured and leg injured by fall of roof.
	11	Paul Prytrzabulla,	Pole,	Driver,	23	S.	Boyd,	Allegheny,	Foot injured by fall of slate.
	11	L. Breton,	English,	Miner,	50	S.	Blyth,	Allegheny,	Foot injured; fall of roof coal.
	25	Michael Olick,	Pole,	Miner,	42	M.	Nixon,	Allegheny,	Slightly burned by gas explosion.
	27	Chas. Silver,	Pole,	Miner,	19	S.	Nixon,	Allegheny,	Slightly burned by gas explosion. A roof fall occurred on roadway of their room; they went into the room over the fall with an open light.
	27	Mike Savastogs,	Pole,	Miner,	49	M.	Nixon,	Allegheny,	
	28	Daniel Morgan,	Irish,	Laborer,	32	M.	Laurel Hill No. 2,	Washington,	Back injured by fall of rock.
April	10	Frank Marzyocco,	Italian,	Miner,	55	M.	Essen No. 1,	Allegheny,	Hip dislocated by fall of coal.
	11	Michael Augustine,	American,	Driver,	38	M.	Castle Shannon,	Allegheny,	Arm and hip broken; fell in front of cars.
	29	George Young,	English,	Miner,	59	M.	Boon,	Washington,	Collar bone broken by fall of slate.
	29	Joseph Sewich,	Hungarian,	Miner,	40	M.	Morgan,	Allegheny,	Foot injured by fall of coal.
May	7	Philip Peters,	American,	Miner,	16	....	Mansfield No. 2,	Allegheny,	Thigh bone fractured by fall of slate.
	14	George Verinski,	Slav,	Miner,	26	M.	First Pool No. 1,	Allegheny,	Bruised about back and hips by fall of slate.
	14	James McNell,	Scotch,	Driver,	43	M.	Blyth,	Allegheny,	Head injured between car and prop.
	16	Mike Petty,	Hungarian,	Miner,	35	M.	Vulcan,	Allegheny,	Leg broke by fall of coal.
	22	Charles Peach,	American,	Miner,	58	M.	First Pool No. 1,	Allegheny,	Thigh broken and head injured by fall of slate.

TABLE V—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
June	8	Peter Vedras,	Pole,	Miner,	18	S.	Champion,	Allegheny,	Seriously injured; he attempted to jump on cars and fell under them.
	12	Wm. Knall,	American,	Trip Rider,	30	S.	Bridgeville,	Allegheny,	Hand injured between mine cars.
	13	Smaley Steward,	American,	Machine runner,	23	S.	Pan Handle,	Allegheny,	Leg broken by fall of slate.
	17	George Penate,	Italian,	Miner,	33	M.	Oak Hill No. 4,	Allegheny,	Back seriously injured by fall of slate.
	29	Andrew Steber,	German,	Miner,	45	M.	Bridgeville,	Allegheny,	Foot injured by fall of slate, necessitating amputation.
July	1	Mike Borino,	Austrian,	Machine helper,	28	M.	Partridge,	Allegheny,	One leg cut off and the other badly mangled by a mining machine.
	8	John Yamus,	Pole,	Miner,	32	M.	Boyd,	Allegheny,	Thigh broken by fall of slate
	17	Max Federal,	Russian,	Miner,	35	M.	Pan Handle,	Allegheny,	Leg broken by fall of slate.
	23	Barney Boyle,	American,	Miner,	40	M.	First Pool No. 2,	Allegheny,	Leg broken and back injured by fall of slate.
	31	Weld Wildnner,	German,	Miner,	45	S.	Leasdale,	Allegheny,	Back and leg injured by fall of slate.
Aug.	1	W. J. Burtman,	Scotch,	Driver,	21	S.	Vulcan,	Allegheny,	Collar bone broken by cars.
	2	Peter Petty,	Hungarian,	Machine helper,	26	S.	Vulcan,	Allegheny,	Leg broken by fall of slate.
	5	Antonio Celadon,	Italian,	Miner,	48	S.	Federal No. 2,	Allegheny,	Slightly injured by fall of slate.
	8	Wm. McGlosky,	Hungarian,	Machine helper,	19	S.	First Pool No. 2,	Allegheny,	Thigh injured by fall of slate.
	8	Stants Kilcewski,	Pole,	Miner,	....	S.	First Pool No. 2,	Allegheny,	Back injured by fall of slate.
	13	Desire Paquet,	Belgian,	Machine runner,	41	M.	Creedmore,	Washington,	Burned by gas explosion. These two persons passed over a danger signal with open lights and ignited the gas.
	13	Jules Paeaux,	Belgian,	Miner,	41	M.	Creedmore,	Washington,	
	13	Joseph Powell,	American,	Laborer,	22	S.	Boyd,	Allegheny,	Severely injured between railroad car and tipple.
	14	James Phillips,	Welsh,	Driver,	34	S.	Boyd,	Allegheny,	Bruised about the hips; caught between car and entry.
	19	George Reho,	Slav,	Miner,	34	S.	O. I. C.,	Allegheny,	Head and ankle injured by fall of slate.
	26	Baptist Fayssie,	American,	Driver,	17	....	Federal No. 2,	Allegheny,	Arm broken between car and side of passageway.
Sept.	9	Fred. Clemens,	German,	Miner,	51	M.	Nixon,	Allegheny,	Head injured by fall of roof.
	9	John Seifrey,	German,	Miner,	60	S.	Nixon,	Allegheny,	Back injured by fall of slate.
	13	Walter Jones,	Welsh,	Driver,	26	S.	Lake Superior,	Allegheny,	Leg broken; struck by cars.
	21	Joe Dandof,	Hungarian,	Miner,	33	S.	Laurel Hill No. 5,	Allegheny,	Thigh and nose broken by fall of coal and slate.
	24	Ponder Jackman,	Italian,	Miner,	26	S.	Moon Run,	Allegheny,	Back injured by fall of slate in his room.

	26	August Hook,	German,	Miner,	30	M.	Champion,	Allegheny,	Leg broken; was struck by a dilly trip.
Oct.	2	Joseph Ruschel,	American,	Miner,	40	M.	Essen No. 2,	Allegheny,	Leg broken by fall of coal.
	3	Charles Sanders,	American,	Miner,	32	S.	Leasdale,	Allegheny,	Leg broken and internal injury by fall of slate.
	6	David Hammond,	American,	Engine man,	48	M.	Morgan,	Allegheny,	Hand injured in attempting to clean machinery while it was in motion.
	11	William Schultz,	American,	Miner boy,	15	....	Fair Haven,	Allegheny,	Leg broken by fall of coal.
	21	Martin Conley,	American,	Driver,	18	S.	Boyd,	Allegheny,	Hips injured between cars.
	23	Bargan Constante,	Italian,	Miner,	38	M.	Essen No. 1,	Allegheny,	Hand and arm injured by a car.
	24	Lewis Sinemus,	German,	Miner,	35	M.	Mansfield No. 2,	Allegheny,	Foot injured by fall of roof.
	25	John Hampson,	English,	Roadman,	69	M.	Boyd,	Allegheny,	Leg broken; struck by the hauling rope.
Nov.	1	Paul Melese,	Italian,	Miner,	21	S.	Witch Hazel,	Allegheny,	Foot injured by fall of slate.
	6	Joseph Zibraski,	Pole,	Miner,	58	M.	Boyd,	Allegheny,	Head and shoulders injured by fall of slate.
	11	Lewis Dice,	American,	Roadman,	48	M.	Mansfield No. 2,	Allegheny,	Leg injured; struck by a post that he was taking out.
	12	Thomas Brewer,	English,	Miner,	19	S.	Mansfield No. 2,	Allegheny,	Collar bone broken; he fell in front of a car.
	26	William Steel,	Scotch,	Driver,	22	S.	Champion,	Allegheny,	Foot injured by cars.
	26	Mike Cekosky,	Hungarian,	Miner,	30	S.	First Pool No. 2,	....	Back and leg injured by fall of slate.
	29	Mike Rick,	Austrian,	Miner,	38	M.	Walton,	Allegheny,	Leg broken by fall of coal and slate.
Dec.	3	John Delfavero,	Italian,	Miner,	40	S.	Essen No. 1,	Allegheny,	Arm and side seriously injured by fall of slate.
	6	John Ynath,	Slav,	Miner,	20	S.	Essen No. 3,	Allegheny,	Head injured by fall of slate.
	9	Robert Binder,	German,	Miner,	36	M.	Shaw,	Washington,	Collar bone broken by fall of coal and slate.
	14	Hays,	Irish,	Miner,	46	M.	Hazel,	Washington,	Hand injured between car and a prop.
	16	John Campbell,	American,	Miner,	32	M.	Bower Hill,	Allegheny,	Slightly burned by gas explosion; he went on top of a roof fall with an open light.
	23	Peter Jamie,	Italian,	Miner,	32	M.	Midland No. 1,	Washington,	Head and shoulders injured by fall of coal.



Eighth Bituminous District.

CLEARFIELD AND CENTRE COUNTIES.

Philipsburg, Pa., February 8, 1902.

Hon. James W. Latta, Secretary of Internal Affairs:

Sir: In compliance with the provisions of the act of Assembly approved May 5, 1893, I herewith submit my annual report of the inspection of mines in the Eighth Bituminous District, for the year ending December 31, 1901.

The report contains the usual statistical tables, giving number of employes in and about the mines, number of tons of coal produced and shipped by rail, sold to local trade, and used for steam and heat at the mines; also the number of fatal and non-fatal accidents.

It is very gratifying to report that the fatal accidents have been reduced to three as against nine in the preceding year, and while the number of tons mined in 1900 was 4,342,176 as against 3,385,284 tons in 1901, a decrease of 956,892 tons, the death rate was greatly reduced for the number of tons mined, being 482,464 tons per life lost during the year 1900, as against 1,128,428 tons during the year 1901. The number of non-fatal accidents was practically the same as for the year previous, I can only account for the decrease in loss of human life, from the fact of the miners not having been so steadily employed during the past year. I posted a set of printed instructions at each mine on the first of the year, explaining to the workmen under which conditions the greatest number of accidents were liable to occur, together with their causes, with minute instructions as to the best method of averting them, and I at the same time cautioned each mine foreman to see that the instructions were complied with, and while I do not attribute to these instructions the reduction in loss of life, yet they aided the foreman in instructing the miner as to his duties for self preservation.

But it will be seen that in spite of all the caution and warning given, men will put off something they should have done until it results in injury to themselves or others.

The inspection districts were revised during the past year by the Chief of the Bureau of Mines, and two additional districts were created.

In this report will be found other data relative to condition of the mines, the volume of ventilation supplied in cubic feet for each person employed; and while there have been local conditions that might have been improved, the general condition as to healthfulness and safety have been good.

I had occasion to make information before a justice of the peace against two small coal operators who insisted on employing more men than the law permitted, doing so on account of the great demand for coal; but on being confronted with the penalty they asked to have the case withdrawn on the promise that the violation would never occur again, which I did by leaving the case in the hands of the justice, and requesting him not to make any return of it to court, they paying all costs, which I find had the desired effect in having them comply with the law.

In regard to the capacity of the mines in this district, a large percentage of them are very small, and one-half as many mines could produce more coal if they were conducted on the same methods as the first twenty mines on Table "A;" and while a few small mines were opened during the year, there are two new shafts being opened and developed on modern methods with every appliance for healthfulness and safety. In regard to the output of coal, the report shows that the average days worked was equal only to three-fifths time, which was caused by a scarcity of railroad cars.

Very respectfully,

JOSEPH KNAPPER.

The following is a summary of the mining statistics and a classification of accidents in the district, the figures denoting production, shipment, etc., in net tons:

Number of mines in the district,	112
Number of mines in operation during 1901,	112
Number of tons of coal produced,	3,385,284
Number of tons shipped,	3,319,083
Number of tons used in the manufacture of coke,	4,646
Number of tons used for steam at the mines,	45,976
Number of tons sold to employes and others,	13,579
Number of tons produced by pick mining (approximately),	2,941,644
Number of tons produced by compressed air mining machines (approximately),	271,779
Number of tons produced by electric mining machines (approximately),	169,861
Number of coke ovens,	136
Number of tons of coke produced,	2,550
Number of persons employed inside of mines,	5,702

Number of persons employed outside of mines, ...	413
Total number of persons employed, ...	6,115
Number of mules used in and about the mines, ...	635
Number of fatal accidents, ...	3
Number of tons of coal produced per each fatal accident, ...	1,128,428
Number of non-fatal accidents, ...	23
Number of tons of coal produced per each non-fatal accident, ...	147,186
Number of wives left widows by accidents, ...	2
Number of orphans left by accidents, ...	4
Number of kegs of powder used, ...	14,650
Number of pounds of dynamite used, ...	5,367
Number of cylindrical boilers in use, ...	17
Number of tubular boilers in use, ...	58
Number of steam locomotives in use, ...	2
Number of electric motors in use, ...	6
Number of mining machines operated by air, ...	37
Number of mining machines operated by electricity,.	7
Number of old mines abandoned, ...	6
Number of new mines opened, ...	12
Average number of days worked at all the mines, ...	154 8-10

TABLE A—Showing Production of Coal, Number of Persons Employed by Each Operators During the Year and Average Number of Tons Produced per Employe.

Names of Operators.	Number of tons of coal produced.	Number of lives lost.	Number of tons of coal produced per life lost.	Number of persons injured.	Number of tons of coal produced per person injured.	Total number of persons employed.	Number employed per life lost.	Number employed per person injured.	Average number of tons of coal produced per employe.
Berwind White Coal Min. Co.,	551,653			4	137,913	1,058		264	525
Morrisdale Coal Mining Co.,	446,869	1	446,869	5	89,373	630	630	126	709
Peale, Peacock & Kerr, Inc.,	496,051	1	496,051	3	165,350	672	672	224	738
G. L. Whitehead Coal Co.,	63,071					137			460
Cambria Coal Mining Co.,	83,178					160			519
W. A. Gould & Bro. & Reakirt Bro. & Co.,	60,645					180			336
Henry Liveright,	36,044					94			383
J. Swires & Ophir Coal Co.,	147,687			1	147,687	334		334	442
Irish Bros. & Co.,	137,275					247			555
Forest Coal Mining Co.,	25,425					109			233
John G. Platt Coal Min. Co.,	22,689					75			302
Henrietta Coal Co., Ltd.,	29,841					64			466
O. L. Schoonover,	21,287					57			374
Moshannon Coal Mining Co.,	27,639					44			638
American Union Coal Co.,	16,669					71			234
John Barnes & Sons,	11,354					33			344
Beech Creek Coal & Coke Co.,	181,374			2	90,687	189		93	959
M. and F. Craig,	29,120					59			493
Blair Bros.,	59,327					65			912
Thos. C. Heims & Co.,	38,140			1	38,140	105		105	363
Brown & Dyer,	25,708					41			627
Harbison & Walker,	28,060					91			308
Betz Coal Mining Co.,	13,442					60			224
Thomas Blythe,	83.584					120			696
Ghem Coal Co.,	81,632			2	40,816	111		55	735
Beulah Coal Co.,	66,011			3	22,005	134		67	492
W. G. Fishburn,	55,282					96			575
Wm. Casker,	19,499					44			443
John Hooten,	26,169					50			523
Samuel Styer,	16,717					54			309
Alder Run Colliery Co.,	18,082					44			411
Adams & Co.,	58,906					80			735
T. J. Lee & Co., & Lee Coal Co.,	11,888					20			591
Coaldale Mining Co.,	29,248	1	29,248			57	57		513
W. J. Davis,	12,089					23			525
John Walton & Son,	8,223					13			632
H. M. Hughes & Son,	4,968					15			331
J. & H. W. Todd,	82.023			1	82.023	142		142	577
Mapleton Coal Mining Co.,	5,060					23			228
Meadowbrook Mining Co.,	819					9			91
J. R. Brown & Co.,	10.449					29			360
Hilling, Lamb & Co.,	2,988					10			298
W. F. Holt,	8.762					14			625
Stratton Bros.,	6,731					10			673
Penn Iron Co.,	18,256					40			456
L. Milton Wilson,	30.484					51			597
Townsend & Milson,	8,885					17			522
Walker & Gleason,	2,718					12			226
Jas. F. Stott,	5,656					18			314
Lawton & Co.,	3,306			1	3,306	30		30	110
J. Mountz,	9.142					36			253
Chas. D. Lorraine,	11.574					24			482
J. R. Flenner & Co.,	6,457					37			174
Victoria Mining Co.,	125,128					204			613
Total,	3,385,284	3	1,128,428	23	147,186	6,115	2,038	266	553½

TABLE B—Showing Tons of Coal Produced per Life Lost and per Non-Fatal Accident.

Names of Operators.	Fatal accidents.	Tons of coal mined per each fatal accident.	Non-fatal accidents.	Tons of coal mined per each non-fatal accident.
Berwind White Coal Mining Co.,	....	....	4	137,913
Morrisdale Coal Mining Co.,	1	446,869	5	89,373
Peale, Peacock & Kerr, Inc.,	1	496,051	3	165,350
J. Swires & Ophir Coal Co.,	....	....	1	107,687
Beech Creek Coal and Coke Co.,	....	....	2	90,687
Thos. C. Heims & Co.,	....	....	1	38,140
Ghem Coal Mining Co.,	....	....	2	40,816
Beulah Coal Co.,	....	....	3	22,005
Coaldale Mining Co.,	1	29,248	....	....
J. and H. W. Todd,	....	....	1	82,023
Lawton & Co.,	....	....	1	3,306
Totals,	3	972,168	23	777,306

TABLE C—Classification of Accidents and the Occupation of Each Person Killed or Injured.

Cause of Accident.	Occupations of person injured.	Fatal accident.	Injured.	Totals.
By fall of coal,	Miner,	1	3	4
By falls of roof,	Miner,	....	10	10
By falls of bony coal,	Miner,	....	3	3
By mine cars,	Driver,	....	4	4
By mine cars,	Miners,	1	3	4
By railroad cars,	Car shifter,	1	....	1
Totals,	....	3	23	26

TABLE D—Nationalities of Persons Killed and Injured.

Nationality.	Killed.	Injured.	Totals.
American,	....	7	7
English,	1	3	4
Irish,	....	1	1
Scotch,	....	1	1
German,	1	....	1
Swede,	1	3	4
Hungarian,	....	1	1
Slav,	....	5	5
Italian,	....	2	2
Totals,	3	23	26

Report of the board of examiners for mine foreman and fire bosses examinations since the first meeting in 1885.

Board of examiners were: Mine Inspector, John Watt; Coal Operator, P. B. Zentmyer; Miner, W. S. Edwards.

Board met on the 30th of November, 1885, for the purpose of granting service certificates to those having held positions of foreman one year prior to the law of 1885 but no record appears to show who were granted such certificates.

An examination of candidates as to their qualifications and fitness to be foremen was held December 1st, 2d and 3d, 1885.

The average required to obtain a certificate was fixed at sixty per cent. and the following persons were granted certificates of second grade: R. Cooper, D. R. Philips, David Johnson, A. P. Isenberg, Geo. H. Wilson, John D. Jones, D. H. Thomas.

The second examination was held by the same board of examiners on the 1st, 2d and 3d of April, 1886, and the following persons passed: Edward Edwards, Charles Jenkins, Patrick Campbell, James Campbell, James Ward, W. H. Morris, Joseph Campbell, Thomas Booth, James Wood, Richard Bowen, William Devlin, John D. Jones, James Mechan, Archibald Bathgate, Thomas D. Forsythe, John Allen, John Hawkins.

The next examination was held on August 4th, 5th and 6th, 1886, and the following candidates were successful: Peter Cameron, A. P. Cameron, John McIntyre, Clarence Farber, William Bell, Thomas Benson, T. M. Barrett, C. J. Paul, E. A Foster, William Alexander, Daniel Allsop, Isaac Smith.

The next examination was held in March 19th, 20th and 30th, 1887, and the following persons received certificates: John B. Hughes, E. C. Howe, W. C. Lingle, John Lochrie, W. Allison, Thomas Brown, John Stoker, John Quinn, James Campbell, D. H. Campbell, Francis Campbell, John F. Farrell, Cornelius Maher, Edward Grundy, George Gould, Edward Hughes, E. F. Townsend, James Starford, John Johnson, B. F. Smith, T. W. Simpson.

In January, 1888, the board met and granted the following certificates: William McDowell, David Allgood, John Batterby, Thomas Scollins, Andrew Patrick, Thomas Young, James Higham, Matthew Morris, Edward Bradley, James Pope, Edward Lloyd, W. J. Travesic, T. W. Jones, C. H. Edwards, Thomas E. Estep, Edward Hughes, E. F. Townsend, Hugh Rowland, Robert Whitehead, John Woodcock, John Maurice.

The examining board was then changed to: Mine Inspector, B. Callaghan; Coal Operator, P. B. Zentmyer; Miner, W. S. Edwards.

The board met on September 14, 1888, and granted the following certificates: Samuel Twiggs, John Milsom, George Rees.

The board met on February 26th, 27th and 28th, 1889, and granted the following certificates: First grade, Edward Hughes, M. H. Blythe, John Madill, Richard Moran, J. C. Johnson. Second grade, James Scofield, John McCrory, James Nicholson, H. Redding, Evan Evans, James Jennicks, Thomas Bellis, James Gatehouse, Frank Martenson, John Hooten, D. D. Jones, Wm. Patterson, James White, Thomas Blythe, Richard Lobb, Thomas Pilkington, J. S. Kirkwood, John M. Click, Joseph Knapper, Wm. Fleming (certificate burned in January, 1898, and reissued in 1902), John May, Benjamin Lewis, Daniel Geahey, A. G. Spears.

The next board of examiners appointed was, Mine Inspector, Austin King; Coal Operator, P. B. Zentmyer; Miner, John Quinn.

An examination was held January 14, 15, 16 and 17, 1890, and certificates were issued to the following persons: First grade, Richard Dunn, Charlton Dixon, Joseph Wheatley, Daniel Allsop. Second grade, William Campbell, Henry Byron, Robert Fleming.

The next examination was held December 2, 3, 4 and 5, 1890, and the following certificates were issued: First Grade, James Harvey, Jr. Second Grade, Samuel B. Green, Alex. Monteith, Richard C. Morris, Thomas Marshall, William Irvine, Michael Craig, John Archibald.

The next examination was held January, 1891, by the following board: D. H. Thomas, Mine Inspector; P. B. Zentmyer, operator; William Devlin, miner, and certificates were issued to the following persons: First Grade, John Baird, John Morris. Second Grade Thos. R. Pilkington, John C. Robinson, George Maxwell, Bernard McCann, William Todhunter, David Green, J. T. Jones, S. E. Pfoutz, James McAlarney, William E. Williams.

William Patterson was appointed to succeed P. B. Zentmyer; board next met in November 1892, and issued certificates to the following persons: First Grade, John Byron, John E. McDermott, John Carlin, W. J. K. Irvin, J. T. Evans. Second Grade, Chas. Rodden, Alex Hyslop, J. R. Summerville, Thos. Stoker, James McFarlomay, J. C. Burns, Frank Carroll, William Edney, Benjamin Badman.

A new board was appointed and was composed of the following persons: D. H. Thomas, Inspector; A. S. R. Richards, operator; Matt. Morris, miner, which met on January 16, 1894, and issued the following certificates: First Grade, A. B. Murray, Edward Dawson, Robert Cole, Thomas Griffiths, Robert Lees. Second Grade, E. D. Davis, Donnell Craig, James Delves, H. C. Williams, John Howard, John McGowan, D. D. Lewis, Edward L. Shell, John Fyfe, Aaron Fuller, George Hartshorne, Henry Herbert, H. Thomas, John M. Baker, W. H. Booth, Wm. Bell, James Gray, Samuel Sykes.

The next examination was held January 22, 1895, and the following persons received certificates: First Grade, Matthew Dixon.

Second Grade, C. E. Sharpless, John Maurice, Jr., Thos. Duggan.

Owing to D. H. Thomas having died the newly appointed Mine Inspector, Joseph Knapper helped finish the above examination.

The next meeting of the board was held April 21, 22, 23 and 24, 1896, certificates were issued to the following persons: Second Grade, A. L. Pollock, D. H. Jones, Adolph Cook.

The next examination was held in April, 1897, and the following persons received certificates: First Grade, James Starford, C. H. Milsom, R C. Morris, D. H. Jones. Second Grade, Wm. Wood, Benj. Philips, John Ball, Richard Gray, David Dunn, Donald Craig, Joseph Harrison, John Tate, M. E. Marks, Arthur White, Geo. L. Minds.

The examining board was: Joseph Knapper, Mine Inspector; A. S. R. Richards, operator; E. F. Townsend, miner, which met in February, 1898, and the following certificates were issued: Second Grade, Joseph Harrison, James King, Patrick McCambly, M. Wayne, W. H. Ellis, John Allen.

The next meeting was held February 3, 1899, and certificates were issued to the following persons: First Grade, Thomas D. Forsythe. Second Grade, W. S. Blythe, Adolph Cook, Chas. E. Davis, James F. Green.

The next meeting was held January 20, 1900, and certificates were issued to the following persons: First Grade, James Delves. Second Grade, William Gray, Thomas Richardson, Thomas W. Gatehouse, Robert Patterson, James McConville, Wm. Wood, Thos. J. Richards.

January 4, 1901, a meeting was held and certificates issued to the following persons: First Grade, William Cameron. Second Grade, John Stevenson, Thos. B. Gallagher, Frank Boyd, James Flynn, Chas. E. Diehl, John P. Johnson, George Cole, Fred. Pepper, Wm. Pilkington, Harry C. Estep, Wm. C. Pollock, Wm. H. Gates, James Rice, Martin Duggan, Jas. B. Wilson, Chas. B. Maxwell, Michael Gorman, Chas. K. Johnson.

A description of fatal accidents that occured in and about the mines:

The first accident that occurred during the year was to Albert Edward Mathias. He was mining coal with an elder brother, but he was continually found along the heading with trapper boys, and on this occasion was 1,000 feet away from his working place at a point where there was a ninety per cent. curve on the road, where there was a space of only eighteen inches between the side of the car and the side of the heading but on the opposite side there was from eight to fifteen feet of space. When the driver came out with a loaded mine car and right opposite the boy, the car left the track and caught him on the neck severing the jugular vein; he died in four hours.

Adolph Colander was fatally injured by being caught under a fall of coal; he was undercutting the coal at the time and was withdrawing pillars and mining the coal with two open ends, without having taken the precaution to secure the coal from falling by setting sprags, which is absolutely necessary in that kind of work owing to the constant crush and pressure from the overlying broken strata.

Edward Shirk a railroad car-shifter's both legs were run over, resulting in his death. It seemed that he was about to move the car down the siding, had put his brake stick in the wheel and was standing on the front end of the car, and before he had gotten a firm hold of the stick he must have moved the dog or ratchet catch of the wheel with his foot and instantly the car began to move and the brake stick struck him a heavy blow on the side of the head, knocking him off the car and in front of the wheels.

He was taken at once to the Philipsburg Hospital but nothing could be done for him.

Following is a Brief Report of the Mines.

Bermind White Coal Mining Company mines, Atlantic No. 1 and Eureka No. 5, No. 7, No. 16, No.18, No.19, No. 21, No. 22, No. 24 and No. 27 have ample ventilation and are generally well drained; at No. 7 shaft an entire new tipple and some other part of the head frame have been rebuilt during the year, and a rope haulage system put in use inside of the mine to dispense with mules in some sections.

Eureka No. 28 mine are two new shaft openings for hoisting, ventilation and traveling way. The hoist shaft is 14x24 feet and the fan shaft is 10x16 feet and both 130 feet deep, and were both put down in the space of four months, only a small Cameron pump with a two inch discharge pipe being necessary to keep the shaft free from water; the shafts are in virgin territory.

The coal seam is about four feet four inches, with six to eight inches of bony coal in addition, one and one-half feet from the roof.

A Capell fan eleven feet in diameter is being installed for ventilation, and two water tube Sterling boilers of 500 horse power will supply steam. A Norwalk air compressor 26x30 inch, will furnish power for mining coal by machinery, to operate the Sullivan machines; other arrangements are not yet complete.

They constructed two miles of railway before the shafts were commenced, and three sidings were made for loading under that number of shutes, also one track to pass the tipples with empty cars.

The plan on the tipple is for cars to run off the cage, pass over scales having automatic register for the weights of coal and on to self-acting tips, back switch to a chain and sprocket elevator, to raise cars automatically to the opposite side of the shaft and on a level with the cage landing. The head frames are of the best oak, the length of lease not justifying steel tipples.

The haulage will be by electricity providing the mine does not generate gas, which will be well tested before any electric appliances are installed.

Morrisdale Coal Mining Company.—Mines Nos. 1, 2, 4, 6, 7 and 8 have been kept in a very fair condition. The mine fan formerly used while being under a constant strain to supply the necessary ventilation to the most distant parts of the mine, is being relieved of considerable pressure by opening a new No. 3 shaft one thousand feet ahead of the most distant parts of the mine, both as a new operation, also for pumping and to improve the ventilation. The equipments have not yet been decided upon, but the shaft is 10x16 feet and 165 feet deep.

Considerable water was encountered in sinking the shaft, and several times they were compelled to cease sinking during heavy rains owing to the shaft being put down through old workings of the Moshannon seam which collect water through the broken strata for at least two miles. The seam to be penetrated is "B," the same as their other shafts, and a very unfortunate part of this location is in branch faults that were all through the "D" seam and running in all directions. They tried to avoid them as far as possible and even abandoned one section after sinking thirty feet and building a small battery of boilers, for what they thought was a more suitable place; but on going down in the strata, the same conditions obtained.

The facility for sinking was a substantial head frame designed for this occasion only a compressor and an Ingersoll drilling machine, three hundred horse power steam boilers, one Reilley No. 11 pump 10x14 inch making 180 strokes per minute, located sixty-five feet down the shaft, a Cameron straight No. 10 pump with twenty-six inch stroke making seventy strokes per minute, and three other equally large pumps located in parts of the abandoned surrounding mines to relieve the shaft pumps as far as possible. All of the work was under the direct charge of the mine superintendent.

Peale, Peacock and Kerr mines.—Have been kept in very fair condition, they are Decatur Nos. 1, 2, 3 and 4 and Ogle Nos. 1 and 5 mines. At the latter place they expect to relieve the fan by making openings near the extreme working faces or by putting in another ventilator.

Cambria Coal Company's mines.—Leland Nos. 1, 2, 3 and 6 mines have been kept in very fair condition; at the latter mine a substantial furnace has been built with a bar surface of 6x6 feet which produces 12,700 cubic feet of air.

W. A. Gould & Bro. mines.—Midvale Nos. 1 and 2, Henderson Nos.

4 and 5, and Loraine mine of Reakirt Bros. & Co., by the above named operators have been kept in a fair condition. The first four mines are operated at a disadvantage in having only the coal left by former operators to take out, which causes a constant change in the plan of ventilation.

The same can be said of Henrietta and Friendship mines of the Henrietta Coal Company, also Moshannon Nos. 1, 2 and 3 of the Mos hannon Coal Mining Co.

Beech Creek Coal and Coke Company's No. 8 Summerville mine has been in very fair condition throughout the year; a new Capell fan eight feet in diameter has been put in.

Acme Nos. 1 and 2 mines of the Victoria Coal Mining Company have been kept in a very fair condition both in ventilation and drainage.

Sterling Nos. 2 and 3 mines have not had any excess of air; I had to request that a furnace be built at No. 2 and they tried to connect with an adjoining mine to relieve the pressure and increase the air in No. 3 mine.

Fairmount Nos. 2 and 4 also Phoenix mine have been well ventilated, also Ophir Nos. 1 and 2, Ashman, Ghem and Royal of J. Swires & Stotts.

All the Irish Bros. mines, Red Jacket, Baltic Nos. 1 and 3, have been well ventilated; Colorado No. 3 which is not and I attributed this to inability or neglect of the foreman to have the air properly conducted into the workings. A volume of 32,000 cubic feet of air, I thought ample for the ninety-five men employed; and on my last visit, the superintendent promised to see that the foreman attended to remedying the defects complained of.

Forest Coal Mining Company's.—Falcon Nos. 1, 2 and 3 mines were kept in a very fair condition; the latter, a new mine has electric haulage, automatic tipples and a Stine fan for ventilation which have been installed during the year. ,

Guion and Colorado No. 2 have done very little work during the year, but were kept in a very fair condition; the same can be said of Cuba mine of the same company.

Orient Nos. 1 and 2 mines of Blair Bros. have been kept as well as the conditions would permit. Three openings have been made to avoid faulty territory encountered in No. 2 mine.

At Birds Eye mine a 16-foot Brazil fan was installed during the latter part of the year.

Webster No. 4 mine was in a very fair condition, also Electric, Lenore, Union Nos. 3 and 5; Varner, Plane and Parks mines of Harbison and Walker Company were kept in a very fair condition; the latter mine is abandoned, the coal having been exhausted.

Kyler No. 1 and Douglas mines have been kept in a very fair condition, the latter mine however worked only three days during the year, but constant pumping has been necessary to keep it free from water.

Betz No. 1 mine is in good condition. No. 2 is a new mine which commenced to ship coal during the latter part of the year.

Alexandria mine has been well drained and has fair ventilation, but a very heavy creep came on near the end of the year, owing to the heavy strata above the coal, and the extreme width of rooms driven and small pillars left to support the strata; the work being on a side hill with three sides of coal appearing at crop line on the property.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Eighth Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Berwind-White Coal Mining Co.						
Atlantic No. 1,	Clearfield,	Thos. Fisher,	Betz Bldg., Phila.,	A. S. R. Richards,	Osceola mills,	Pennsylvania Railroad.
Eureka No. 5,	Clearfield,	Thos. Fisher,	Betz Bldg., Phila.,	A. S. R. Richards,	Osceola Mills,	Pennsylvania Railroad.
Eureka No. 7,	Clearfield,	Thos. Fisher,	Betz Bldg., Phila.,	A. S. R. Richards,	Osceola Mills,	Pennsylvania Railroad.
Eureka No. 16,	Clearfield,	Thos. Fisher,	Betz Bldg., Phila.,	A. S. R. Richards,	Osceola Mills,	Pennsylvania Railroad.
Eureka No. 18,	Clearfield,	Thos. Fisher,	Betz Bldg., Phila.,	A. S. R. Richards,	Osceola Mills,	Pennsylvania Railroad.
Eureka No. 19,	Clearfield,	Thos. Fisher,	Betz Bldg., Phila.,	A. S. R. Richards,	Osceola Mills,	Pennsylvania Railroad.
Eureka No. 21,	Centre,	Thos. Fisher,	Betz Bldg., Phila.,	A. S. R. Richards,	Osceola Mills,	Pennsylvania Railroad.
Eureka No. 22,	Clearfield,	Thos. Fisher,	Betz Bldg., Phila.,	A. S. R. Richards,	Osceola Mills,	Pennsylvania Railroad.
Eureka No. 24,	Clearfield,	Thos. Fisher,	Betz Bldg., Phila.,	A. S. R. Richards,	Osceola Mills,	Pennsylvania Railroad.
Eureka No. 27,	Clearfield,	Thos. Fisher,	Betz Bldg., Phila.,	A. S. R. Richards,	Osceola Mills,	Pennsylvania Railroad.
Eureka No. 28,	Clearfield,	Thos. Fisher,	Betz Bldg., Phila.,	A. S. R. Richards,	Osceola Mills,	Pennsylvania Railroad.
The Morrisdale Coal Co.						
Morrisdale No. 1 shaft,	Clearfield,	J. E. Hedding,	Morrisdale Mines,	Jas. Starford,	Morrisdale Mines,	New York Central R. R.
Morrisdale No. 2 shaft,	Clearfield,	J. E. Hedding,	Morrisdale Mines,	Jas. Starford,	Morrisdale Mines,	Pennsylvania Railroad.
Morrisdale No. 3 shaft,	Clearfield,	J. E. Hedding,	Morrisdale Mines,	Jas. Starford,	Morrisdale Mines,	New York Central R. R.
Morrisdale No. 4 drift,	Clearfield,	J. E. Hedding,	Morrisdale Mines,	Jas. Starford,	Morrisdale Mines,	Pennsylvania Railroad.
Morrisdale No. 6 drift,	Clearfield,	J. E. Hedding,	Morrisdale Mines,	Jas. Starford,	Morrisdale Mines,	New York Central R. R.
Morrisdale No. 8 drift,	Clearfield,	J. E. Hedding,	Morrisdale Mines,	Jas. Starford,	Morrisdale Mines,	New York Central R. R.
Mabel,	Clearfield,	J. E. Hedding,	Morrisdale Mines,	Jas. Starford,	Morrisdale Mines,	Pennsylvania Railroad.
Troy No. 1,	Clearfield,	J. E. Hedding,	Morrisdale Mines,	Jas. Starford,	Morrisdale Mines,	New York Central R. R.
Troy No. 4,	Clearfield,	J. E. Hedding,	Morrisdale Mines,	Jas. Starford,	Morrisdale Mines,	New York Central R. R.
Morrisdale No. 7,	Clearfield,	J. E. Hedding,	Morrisdale Mines,	Jas. Starford,	Morrisdale Mines,	New York Central R. R.
Peale, Peacock & Kerr, Inc.						
Decatur No. 1,	Clearfield,	Alex. Dunsmore,	Glen Richey,	John C. Dunsmore,	Philipsburg,	New York Central R. R.
Decatur No. 2,	Clearfield,	Alex. Dunsmore,	Glen Richey,	John C. Dunsmore,	Philipsburg,	New York Central R. R.
Decatur No. 3,	Clearfield,	Alex. Dunsmore,	Glen Richey,	John C. Dunsmore,	Philipsburg,	New York Central R. R.
Decatur No. 4,	Clearfield,	Alex. Dunsmore,	Glen Richey,	John C. Dunsmore,	Philipsburg,	New York Central R. R.
Ogle Nos. 1 and 5,	Clearfield,	Alex. Dunsmore,	Glen Richey,	Richard George,	Windburne,	New York Central R. R.
G. L. Whitehead & Co.						
Standard No. 1,	Centre,	John Whitehead,	1 N. 50th St., Phila.	Chas. W. Martin,	Houtzdale,	Pennsylvania Railroad.
Standard No. 2,	Centre,	John Whitehead,	1 N. 50th St., Phila.	Chas. W. Martin,	Houtzdale,	Pennsylvania Railroad.
Standard No. 3,	Centre,	John Whitehead,	1 N. 50th St., Phila.	Chas. W. Martin,	Houtzdale,	Pennsylvania Railroad.
Standard No. 4,	Clearfield,	John Whitehead,	1 N. 50th St., Phila.	Chas. W. Martin,	Houtzdale,	Pennsylvania Railroad.
Standard No. 5,	Clearfield,	John Whitehead,	1 N. 50th St., Phila.	Chas. W. Martin,	Houtzdale,	Pennsylvania Railroad.
Standard No. 6,	Clearfield,	John Whitehead,	1 N. 50th St., Phila.	Chas. W. Martin,	Houtzdale,	Pennsylvania Railroad.
Standard No. 7,	Clearfield,	John Whitehead,	1 N. 50th St., Phila.	Chas. W. Martin,	Houtzdale,	Pennsylvania Railroad.
Standard No. 9,	Clearfield,	John Whitehead,	1 N. 50th St., Phila.	Chas. W. Martin,	Houtzdale,	Pennsylvania Railroad.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Cambria Coal Mining Co.						
Leland No. 1,	Clearfield,	E. S. Brubaker,	Smoke Run,	E. S. Brubaker,	Smoke Run,	Pennsylvania Railroad.
Leland No. 2,	Clearfield,	E. S. Brubaker,	Smoke Run,	E. S. Brubaker,	Smoke Run,	Pennsylvania Railroad.
Leland No. 3,	Clearfield,	E. S. Brubaker,	Smoke Run,	Martin Dungan,	Osceola Mills,	Pennsylvania Railroad.
Leland No. 6,	Clearfield,	E. S. Brubaker,	Smoke Run,	E. S. Brubaker,	Smoke Run,	Pennsylvania Railroad.
W. A. Gould & Bro.						
Henderson No. 4,	Clearfield,	W. A. Gould,	Brisbin,	W. A. Gould,	Brisbin,	Pennsylvania Railroad.
Henderson No. 5,	Clearfield,	W. A. Gould,	Brisbin,	W. A. Gould,	Brisbin,	Pennsylvania Railroad.
Midvale No. 1,	Clearfield,	W. A. Gould,	Brisbin,	W. A. Gould,	Brisbin,	Pennsylvania Railroad.
Midvale No. 2,	Clearfield,	W. A. Gould,	Brisbin,	W. A. Gould,	Brisbin,	Pennsylvania Railroad.
Reakirk Bros. & Co., W. A. Gould & Bro., Contractor.						
Loraine,	Clearfield,	F. A. Vonboguebürg,	Philadelphia,	W. A. Gould,	Brisbin,	Pennsylvania Railroad.
Henry Liveright.						
Fairmount No. 2,	Clearfield,	Henry Liveright,	Osceola Mills,	Frank O'Rorke,	Osceola Mills,	Pennsylvania Railroad.
Fairmount No. 3,	Clearfield,	Henry Liveright,	Osceola Mills,	John Gaffney,	Osceola Mills,	Pennsylvania Railroad.
Fairmount No. 4,	Clearfield,	Henry Liveright,	Osceola Mills,	John Logan,	Osceola Mills,	Pennsylvania Railroad.
Phoenix,	Centre,	Henry Liveright,	Osceola Mills,	John Howard,	Osceola Mills,	Pennsylvania Railroad.
J. Swires.						
Ashman,	Clearfield,			J. Swires,	Philipsburg,	New York Central R. R.
Ghem,	Clearfield,			J. Swires,	Philipsburg,	New York Central R. R.
Ophir Coal Co.						
Ophir No. 1,	Centre,			J. Swires,	Philipsburg,	New York Central R. R.
Royal,	Clearfield,			J. Swires,	Philipsburg,	New York Central R. R.
Irish Bros. & Co.						
Baltic Nos. 1 and 3,	Clearfield,	George Scott,	Philipsburg,	Eli F. Townsend,	Philipsburg,	Pennsylvania Railroad.
Colorado Nos. 3 and 4,	Clearfield,	George Scott,	Philipsburg,	A. P. Isenburg,	Munsons,	New York Central R. R.
Red Jacket,	Clearfield,	George Scott,	Philipsburg,	C. E. Husted,	West Decatur,	Pennsylvania Railroad.
Forest Coal Mining Co.						
Falcon No. 1,	Clearfield,	Frank W. Hess,	Smoke Run,			Pennsylvania Railroad.
Falcon No. 2,	Clearfield,	Frank W. Hess,	Smoke Run,			Pennsylvania Railroad.
Falcon No. 3 and Hobson,	Clearfield,	Frank W. Hess,	Smoke Run,			Pennsylvania Railroad.

John G. Platt Coal Mining Co.						
Colorado No. 2,	Clearfield,			Wm. Powell, Jr.,	Philipsburg,	Pennsylvania Railroad.
Cuba,	Clearfield,			Wm. Powell, Jr.,	Philipsburg,	New York Central R. R.
Guion,	Clearfield,			Wm. Powell, Jr.,	Philipsburg,	Pennsylvania Railroad.
Henrietta Coal Co., Ltd.						
Friendship,	Clearfield,	Asa Spencer,	Philipsburg,	Geo. Lobb,	Brisbin,	Pennsylvania Railroad.
Henrietta,	Clearfield,	Asa Spencer,	Philipsburg,	Geo. Lobb,	Brisbin,	Pennsylvania Railroad.
O. L. Schoonover.						
Forest No. 1,	Clearfield,	O. L. Schoonover,	Munsons,			New York Central R. R.
Forest No. 2,	Clearfield,	O. L. Schoonover,	Munsons,			New York Central R. R.
Moshannon Coal Mining Co.						
Moshannon No. 1,	Clearfield,	C. M. Rowland,	Houtzdale,	C. M. Rowland,	Houtzdale,	Pennsylvania Railroad.
Moshannon No. 2,	Clearfield,	C. M. Rowland,	Houtzdale,	C. M. Rowland,	Houtzdale,	Pennsylvania Railroad.
Moshannon No. 3,	Clearfield,	C. M. Rowland,	Houtzdale,	C. M. Rowland,	Houtzdale,	Pennsylvania Railroad.
American Union Coal Co.						
Mt. Vernon No. 11,	Clearfield,	Geo. I. Cant,	Huntingdon,	Geo. I. Cant,	Huntingdon,	Altoona and P. C. R. R.
Mt. Vernon No. 7,	Clearfield,	Geo. I. Cant,	Huntingdon,	Geo. I. Cant,	Huntingdon,	Pennsylvania Railroad.
John Barnes & Sons.						
Lancashire No. 2,	Clearfield,			Joseph Barnes,	Philipsburg,	Pennsylvania Railroad.
Lancashire No. 3,	Clearfield,			Joseph Barnes,	Philipsburg,	Pennsylvania Railroad.
Beech Creek Coal and Coke Co.						
Summerville No. 8,	Clearfield,	Jas. Summerville,	Windburne,			New York Central R. R.
M. & F. Craig.						
Sterling No. 2,	Clearfield,	Michael Craig,	Brisbin,	Michael Craig,	Brisbin,	Pennsylvania Railroad.
Sterling No. 3,	Clearfield,	Michael Craig,	Brisbin,	Michael Craig,	Brisbin,	Pennsylvania Railroad.
Blair Bros.						
Orient No. 1,	Centre,	H. C. Blair,	Tyrone,	C. F. Blair,	Tyrone,	Pennsylvania Railroad.
Orient No. 2,	Centre,	H. C. Blair,	Tyrone,	C. F. Blair,	Tyrone,	Pennsylvania Railroad.
Thos. C. Helms & Co.						
Electric,	Centre,	Thos. C. Helms,	Osceola Mills,	John P. Johnston,	Osceola Mills,	Pennsylvania Railroad.
Lenore,	Clearfield,	Thos. C. Helms,	Osceola Mills,	W. F. Toddhunter,	West Moshannon,	Pennsylvania Railroad.
Brown & Dwyer.						
Union No. 3,	Centre,	Albert S. Brown,	Osceola Mills,			Pennsylvania Railroad.
Union No. 5,	Clearfield,	Albert S. Brown,	Osceola Mills,			Pennsylvania Railroad.
The Harbison Walker Co.						
Varner,	Clearfield,	H. M. Kurtz,	Woodland,	J. M. Baker,	Woodland,	Private tram road.
Plane,	Clearfield,	H. M. Kurtz,	Woodland,	J. M. Baker,	Woodland,	Private tram road.
Parks,	Clearfield,	H. M. Kurtz,	Woodland,	J. M. Baker,	Woodland,	Private tram road.
W. G. Fishburn.						
Kyler No. 1,	Clearfield,	R. C. Fishburn,	Munsons,	R. C. Fishburn,	Munsons,	New York Central R. R.
Douglas ,	Clearfield,	R. C. Fishburn,	Munsons,	R. C. Fishburn,	Munsons,	New York Central R. R.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Betz Coal Mfg. Co.						
Betz No. 1, ...	Clearfield,...	H. B. Swope, ...	Curwensville, ...	John Stevenson, ...	Belsena Mills, ...	Pennsylvania Railroad.
Betz No. 2, ...	Clearfield,...	H. B. Swope, ...	Curwensville, ...	Geo. Granville, ...	Belsena Mills, ...	Pennsylvania Railroad.
Thos. Blythe.						
Alexandra, ...	Clearfield,...	Thos. Blythe, ...	Madera, ...	W. S. Blythe, ...	Madera, ...	Pennsylvania Railroad.
Ghem Coal Co.						
Ghem, ...	Centre,.......	Ghem Coal Co., ...	Osceola mills, ...	Geo. Good, ...	Osceola Mills, ...	Pennsylvania Railroad.
Beulah Coal Co.						
Webster No. 4, ...	Clearfield,...	Jas. H. Minds, ...	Ramey, ...	Jas. H. Minds, ...	Ramey, ...	Pennsylvania Railroad.
Wm. Casker.						
Birdseye, ...	Clearfield,...	Wm. Casker, ...	Houtzdale, ...	....	....	Pennsylvania Railroad.
J. W. Hootten.						
Black Diamond No. 1, ...	Clearfield,...	J. W. Hootten, ...	Munsons, ...	J. J. Hootten, ...	Munsons, ...	New York Central R. R.
Sam'l Styre.						
Black Diamond No. 2, ...	Clearfield,...	Samuel Styre, ...	Real Est. & Trust Bldg., Phila.	D. W. Turley, ...	Osceola Mills, ...	Pennsylvania Railroad.
W. T. Rainey & Co.						
Belsena No. 3, ...	Clearfield,...	....	....	....	....	Pennsylvania Railroad.
James Gatehouse.						
Barrion, ...	Clearfield,...	....	....	....	....	Pennsylvania Railroad.
Alder Run Colliery Co.						
Alder Run, ...	Clearfield,...	....	....	Guy Snyder, ...	Clearfield, ...	New York Central R. R.
Adams & Co.						
Jefferson, ...	Clearfield,...	Geo. B. Friday, ...	Philipsburg, ...	....	....	Pennsylvania Railroad.
Thos. J. Lee & Co., Ltd., and Lee Coal Co.						
Gearhart, ...	Clearfield,...	Thos. J. Lee, ...	Philipsburg, ...	Thos. J. Lee, ...	Philipsburg, ...	Pennsylvania Railroad.
Lee, ...	Clearfield,...	Thos. J. Lee, ...	Philipsburg, ...	Thos. J. Lee, ...	Philipsburg, ...	New York Central R. R.

Coaldale Mining Co. Coaldale or Imperial No. 1,	Clearfield,	Robt. L. Scott,	Philipsburg,	Jas. Jennicks,	Philipsburg,	Pennsylvania Railroad.
W. J. Davis. Davis,	Clearfield,	W. J. Davis,	Hawk Run,	W. J. Davis,	Hawk Run,	Pennsylvania Railroad.
John Walton & Son. London,	Clearfield,	John Walton,	Philipsburg,	John Walon,	Philipsburg,	Pennsylvania Railroad.
H. M. Hughes. Leader Nos. 1 and 2,	Clearfield,	H. M. Hughes,	Drane,	H. M. Hughes,	Drane,	Pennsylvania Railroad.
John & H. Todd. Line Nos. 1 and 2,	Clearfield,	John T. Todd,	Philipsburg,			New York Central R. R.
Mapleton Coal Co. Mapleton,	Clearfield,	Geo. F. May,	Osceola Mills	Geo. F. May,	Osceola Mills,	Pennsylvania Railroad.
Meadow Brook Coal Mining Co. Meadow Brook,	Clearfield,	W. H. Greenfield & Geo. H. Huddell.	616 Real Est. & Tr. Bldg., Phila.	R. M. Miller,	West Decatur,	Pennsylvania Railroad.
J. R. Brown. Osceola No. 3,	Centre,	J. R. Brown,	Osceola Mills,	J. R. Brown,	Osceola Mills,	Pennsylvania Railroad.
Hilling, Lamb & Co. Porter Run,	Clearfield,			Thos. Morgan,	McCartney,	Pennsylvania Railroad.
Wm. F. Holt. Phoenix,	Clearfield,	Wm. F. Holt,	Philipsburg,			New York Central R. R.
Stratton Bros. Kentuck,	Clearfield,	John L. Stratton,	Philipsburg,	John L. Stratton,	Philipsburg,	Pennsylvania Railroad.
Penn Iron Co. Reading,	Clearfield,	H. C. Borrowes,	Lancaster,	C. Magher,	Osceola Mills,	Pennsylvania Railroad.
L. Milton Wilson. Schwinn, Bear Run,	Clearfield, Centre,	L. Milton Wilson, L. Milton Wilson,	Houtzdale, Houtzdale,			A. and P. C. R. R. Pennsylvania Railroad.
Townsend & Milsom. Shoff No. 2,	Clearfield,	E. F. Townsend,	Philipsburg,	E. F. Townsend,	Philipsburg,	Pennsylvania Railroad.
Walker & Gleason. Troy,	Clearfield,	Walker & Gleason,	Brisbin,			Pennsylvania Railroad.
Jas. F. Stott. Ophir No. 2,	Clearfield,	Jas. F. Stott,	Philipsburg,	John Rapsey,	Philipsburg,	New York Central R. R.
Lawton & Cox. White Oak,	Clearfield,	Lawton & Cox,	Harrisburg,	E. E. Lawton,	Madera,	Pennsylvania Railroad.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
S. J. Mountz. Whiteside Nos. 1 and 2,	Clearfield,	S. J. Mountz,	Moran,	Benj. Badman,	Houtzdale,	Pennsylvania Railroad.
C. D. Loraine. West Moshannon,	Clearfield,					A. and P. C. R. R.
J. R. Flenner & Co. Standard No. 4,	Clearfield,	John Tait,	Ramey,	John Tait,	Ramey,	Pennsylvania Railroad.
Victoria Coal Mining Co. Acme Nos. 1 and 2,	Clearfield,	J. C. Whittenburg	Broadway, N. Y.,	S. M. Miller,	Philipsburg,	New York Central R. R.

TABLE II—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Eighth Bituminous District for the year ending December 31, 1901.

Names of Operators and Collieries.*	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Berwind-White Coal Mining Co.														
Atlantic No. 1,	Clearfield,	105,500	7,252	266	113,018	......	......	235	182	......	......	90	182	15
Eureka No. 5,	Clearfield,	32,259	5,410	258	37,927	......	......	108	101	......	......	26	....	14
Eureka No. 7,	Clearfield,	65,533	2,261	351	68,145	......	......	131	157	......	......	135	265	8
Eureka No. 16,	Clearfield,	24,796	982	58	25,836	......	......	88	77	......	1	80	432	22
Eureka No. 18,	Clearfield,	20,916	116	19	21,051	......	......	107	46	......	......	57	....	12
Eureka No. 19,	Clearfield,	101,922	1,637	200	103,759	......	......	195	147	......	2	495	5	....
Eureka No. 21,	Centre,	24,867	98	34	24,999	......	......	132	60	......	......	194	....	9
Eureka No. 22,	Clearfield,	116,615	1,851	224	118,690	......	......	196	190	......	......	678	77	....
Eureka No. 24,	Clearfield,	15,918	730	31	16,679	......	......	98	45	......	1	....	....	7
Eureka No. 27,	Clearfield,	20,740	216	33	20,989	......	......	140	53	......	......	20	102	18
Eureka No. 28,	Clearfield,	....	560	....	560	......	......	......	......	......	......	....	....	....
Total,	....	529,066	21,113	1,474	551,653	......	......	†143	1,058	......	4	1,775	1,063	105
The Morrisdale Coal Co.														
Morrisdale No. 1 shaft,	Clearfield,	240,680	8,250	1,768	255,344	2,550	106	239	336	1	3	2,014	5,000	26
Morrisdale No. 2 shaft,	Clearfield,	100,823	3,703	....	104,526	......	......	243	135	......	2	900	1,500	8
Morrisdale No. 4,	Clearfield,	8,137	....	....	8,137	......	......	199	10	......	......	65	....	1
Morrisdale No. 6,	Clearfield,	18,378	....	....	18,378	......	......	246	33	......	......	142	....	2
Morrisdale No. 8,	Clearfield,	8,673	....	....	8,673	......	......	199	10	......	......	31	....	1
Mabel,	Clearfield,	9,444	....	....	9,444	......	......	196	16	......	......	27	....	3
Troy Nos. 1 and 2,	Clearfield,	29,375	....	....	29,375	......	......	208	37	......	......	196	....	5
Troy No. 4,	Clearfield,	8,977	....	....	8,977	......	......	170	13	......	......	49	....	1
Morrisdale No. 7,	Clearfield,	4,015	....	....	4,015	......	......	56	10	......	......	30	....	1
Total,	....	428,502	11,953	1,768	446,869	2,550	106	195	600	1	5	3,454	6,500	48

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Peale, Peacock & Kerr, Inc.														
Decatur No. 1,	Clearfield,	27,223	......	......	27,223	......	......	218	49	......	......	......	......	5
Decatur No. 2,	Clearfield,	79,658	......	......	79,658	......	......	234	83	......	......	......	......	10
Decatur No. 3,	Clearfield,	154,695	778	308	155,781	......	......	262	200	......	1	......	100	13
Decatur No. 4,	Clearfield,	41,137	......	......	41,137	......	......	256	58	......	1	......	......	5
Ogle Nos. 1 and 5,	Clearfield,	189,598	2,004	650	192,252	......	......	223	282	1	1	1,300	100	3
Total,		492,311	2,782	958	496,051	......	......	238	672	1	3	1,300	200	36
G. L. Whitehead Coal Co.														
Standard No. 1,	Centre,	22,744	......	......	22,744	......	......	237	43	......	......	237	500	4
Standard No. 2,	Centre,	6,916	......	......	6,916	......	......	201	8	......	......	96	190	2
Standard No. 3,	Centre,	10,510	......	......	10,510	......	......	222	8	......	......	101	223	2
Standard No. 4,	Clearfield,	7,813	......	......	7,813	......	......	74	45	......	......	92	140	2
Standard Nos. 5 and 7,	Clearfield,	11,798	......	......	11,798	......	......	154	28	......	......	145	316	1
Standard No. 9,	Clearfield,	3,290	......	......	3,290	......	......	162	5	......	......	26	52	3
Total,		63,071	......	......	63,071	......	......	175	137	......	......	697	1,421	14
Cambria Coal Mining Co.														
Leland No. 1,	Clearfield,	55,927	179	201	56,307	......	......	130	107	......	......	......	......	12
Leland No. 2,	Clearfield,	6,381	......	......	6,381	......	......	113	11	......	......	......	......	......
Leland No. 3,	Clearfield,	5,846	......	......	5,846	......	......	174	13	......	......	......	......	......
Leland No. 6,	Clearfield,	14,644	......	......	14,644	......	......	162	29	......	......	......	......	......
Total,		82,798	179	201	83,178	......	......	144	160	......	......	......	......	12
W. A. Gould & Bro.														
Henderson No. 4,	Clearfield,	4.221	......	......	4,221	......	......	159	12	......	......	......	......	1
Henderson No. 5,	Clearfield,	4,732	......	......	4,732	......	......	149	17	......	......	25	......	1
Midvale No. 1,	Clearfield,	9,738	......	......	9,738	......	......	192	34	......	......	110	......	3
Midvale No. 2,	Clearfield,	8,048	......	......	8,048	......	......	182	36	......	......	115	......	5

Reakart Bros, Loraine,	Clearfield,	33,906	......	......	33,906	......	......	171	81	......	......	150	......	7
Total,		60,645	......	......	60,645	......	......	170	186	......	......	400	......	37
Henry Liveright.														
Fairmont No. 2,	Clearfield,	16,918	......	......	16,918	......	......	158	43	......	......	101	......	12
Fairmont No. 3,	Clearfield,	1,413	......	......	1,413	......	......	50	9	......	......	10	......	2
Fairmont No. 4,	Clearfield,	1,786	......	......	1,786	......	......	46	11	......	......	13	......	2
Phoenix,	Centre,	15,927	......	......	15,927	......	......	264	31	......	......	98	......	7
Total,		36,044	......	......	36,044	......	......	129	94	......	......	222	......	23
J. Swires and Ophir Coal Co.														
Ashman,	Clearfield,	32,193	156	......	32,349	......	......	143	75	......	1	25	......	8
Ghem,	Clearfield,	36,901	408	......	37,309	......	......	152	77	......	......	240	......	8
Ophir No. 1,	Centre,	61,377	168	......	61,545	......	......	146	81	......	......	200	......	15
Royal,	Clearfield,	15,700	784	......	16,484	......	......	89	101	......	......	100	......	10
Total,		146,171	1,516	......	147,687	......	......	132	334	......	1	565	......	41
Forest Coal Mining Co.														
Falcon No. 1,	Clearfield,	15,761	......	......	15,761	......	......	190	25	......	......	10	......	3
Falcon No. 2,	Clearfield,	2,845	81	......	2,926	......	......	100	50	......	......	50	300	1
Falcon No. 3,	Clearfield,	4,797	......	......	4,797	......	......	120	25	......	......	50	50	2
Hobson,	Clearfield,	1,941	......	......	1,941	......	......	90	9	......	......	30	......	2
Total,		25,344	81	......	25,425	......	......	125	109	......	......	140	350	8
Irish Bros. & Co.														
Baltic No. 1,	Clearfield,	43,466	......	56	43,522	......	......	229	81	......	......	150	......	15
Colorado Nos. 3 and 4,	Clearfield,	51,120	548	168	51,836	......	......	247	103	......	......	170	......	8
Red Jacket,	Clearfield,	39,848	......	2,069	41,917	......	......	248	60	......	......	341	......	3
Total,		134,434	548	2,293	137,275	......	......	241	247	......	......	661	......	26
John G. Platt Coal Mining Co.														
Colorado No. 2,	Clearfield,	2,719	22	16	2,757	......	......	24	25	......	......	20	......	4
Cuba,	Clearfield,	14,881	84	44	15,009	......	......	130	25	......	......	90	......	4
Guion,	Clearfield,	4,851	44	28	4,923	......	......	43	25	......	......	40	......	4
Total,		22,451	150	88	22,689	......	......	65	75	......	......	150	......	12
Henrietta Coal Co., Ltd.														
Henrietta,	Clearfield,	26,432	......	161	26,593	......	......	152	54	......	......	8	......	14
Friendship,	Clearfield,	3,248	......	......	3,248	......	......	72	10	......	......	2	......	2
Total,		29,680	......	161	29,841	......	......	112	64	......	......	10	......	16
O. L. Schoonover.														
Forest No. 1,	Clearfield,	11,026	......	163	11,189	......	......	90	36	......	......	140	45	7
Forest No. 2,	Clearfield,	9,960	......	138	10,098	......	......	78	21	......	......	119	25	5
Total,		20,986	......	301	21,287	......	......	84	57	......	......	259	70	12

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Moshannon Coal Mining Co.														
Moshannon No. 1,	Clearfield,	13,479	......	......	13,479	......	......	201	28	......	......	......	......	6
Moshannon No. 2,	Clearfield,	10,542	......	......	10,542	......	......	150	9	......	......	......	......	2
Moshannon No. 3,	Clearfield,	3,618	......	......	3,618	......	......	52	7	......	......	......	......	2
Total,	......	27,639	......	......	27,639	......	......	134	44	......	......	......	......	10
American Union Coal Co.														
Mt. Vernon No. 7,	Clearfield,	13,978	......	......	13,978	......	......	236	28	......	......	35	100	3
Mt. Vernon No. 11,	Clearfield,	2,691	......	......	2,691	......	......	44	43	......	......	20	60	2
Total,	......	16,669	......	......	16,669	......	......	140	71	......	......	55	160	5
M. & F. Craig.														
Sterling No. 2,	Clearfield,	8,960	......	......	8,960	......	......	142	29	......	......	80	......	4
Sterling No. 3,	Clearfield,	20,160	......	......	20,160	......	......	148	30	......	......	180	20	3
Total,	......	29,120	......	......	29,120	......	......	145	59	......	......	260	20	7
Thos. C. Helms.														
Electric,	Centre,	12,266	......	......	12,266	......	......	98	44	......	......	125	......	8
Lenore,	Clearfield,	25,874	......	......	25,874	......	......	210	61	......	1	175	......	8
Total,	......	38,140	......	......	38,140	......	......	154	105	......	1	300	......	16
Brown & Dwyer.														
Union No. 3,	Centre,	6,802	......	......	6,802	......	......	130	14	......	......	......	......	2
Union No. 5,	Clearfield,	18,906	......	......	13,906	......	......	199	27	......	......	......	......	4
Total,	......	25,708	......	......	25,708	......	......	164	41	......	......	......	......	6

Harbison Walker Co.														
Varner,	Clearfield,	7,965			7,965			150	32					2
Plane,	Clearfield,	12,500			12,500			200	26					1
Parks,	Clearfield,	7,595			7,595			140	33					1
Total,		28,060			28,060			163	91					4
Betz Coal Mining Co.														
Betz No. 1,	Clearfield,	12,054	16	29	12,099			162	49			245		2
Betz No. 2,	Clearfield,	1,307	8	28	1,343			35	11			25	5	1
Total,		13,361	24	57	13,442			98	60			270	5	3
W. G. Fishburn.														
Kyler No. 1,	Clearfield,	53,941	187	527	54,655			119	87			646	450	11
Douglas,	Clearfield,	342	285		627			3	9			6	40	1
Total,		54,283	472	527	55,282			61	96			652	490	12
William Casper.														
Birdseye,	Clearfield,	19,040	336	123	19,499			210	44			35		6
John Hooten.														
Black Diamond No. 1,	Clearfield,	25,945		224	26,169			111	50			200		5
Samuel Styre.														
Black Diamond No. 2,	Clearfield,	14,907	11	1,799	16,717			190	54			90		3
Thos. Lee & Co., Ltd., and T. J. Lee Coal Co.														
Gearhart,	Clearfield,	4,459		56	4,515			88	9					3
Lee,	Clearfield,	7,295		78	7,373			147	11					2
Total,		11,754		134	11,888			117	20					5
L. Milton Wilson.														
Schwinn,	Clearfield,	25,596		97	29,693			246	41			180	150	5
Bear Run,	Centre,	791			791			37	10			7		2
Total,		30,387		97	30,484			141	51			187	150	7

Recapitulation

Berwind-White Coal Mining Co.,		529,066	21,113	1,474	551,653			143	1,058		4	1,775	1,063	105
Morrisdale Coal Mining Co.,		428,502	11,953	1,768	446,869	2,550	106	195	600	1	5	3,454		48
Peale, Peacock and Kerr, Inc.,		492,311	2,782	958	496,051			238	672	1	3	1,300	200	36
G. L. Whitehead Coal Co.,		63,071			63,071			175	137			697	1,421	14
Cambria Coal Mining Co.,		82,798	179	201	83,178			144	160					12
W. A. Gould & Bro. & Reakart Bro. & Co.,		60,645			60,645			170	180			400		17
Henry Liveright,		36,044			36,044			129	94			222		23
J. Swires and Ophir Coal Co.,		146,171	1,516		147,687			132	334		1	565		41

Recapitulation—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Forest Coal Mining Co.,		25,344	81		25,425			125	109			140	350	8
Irish Bros & Co.,		134,434	548	2,293	137,275			241	247			661		26
John G. Platt Coal Mining Co.,		22,451	150	88	22,689			65	75			150		12
Henrietta Coal Co., Ltd.,		29,680		161	29,841			112	64			10		16
O. L. Schoonover,		20,986		301	21,287			84	57			259	70	12
Moshannon Coal Mining Co.,		27,639			27,639			134	44					10
American Union Coal Co.,		16,669			16,669			140	71			55	160	5
John Barnes & Sons,		11,354			11,354			157	33			120		5
Beech Creek Coal and Coke Co.,		179,146	1,144	1,084	181,374			239	189		2			12
M. & F. Craig,		29,120			29,120			145	59			260	20	7
Blair Brothers,		59,327			59,327			240	65			600		12
Thomas C. Helms & Co.,		38,140			38,140			154	105		1	300		16
Brown & Dwyer,		25,708			25,708			164	41					6
Harbison Walker Co.,		28,060			28,060			163	91					4
Betz Coal Mining Co.,		13,361	24	57	13,442			98	60			270	5	3
Thomas Blythe,		83,440	32	112	83,584			226	120			600		8
Ghem Coal Co.,		81,444		188	81,632			251	111		2	309		8
Beulah Coal Co.,		65,243	241	527	66,011			120	134		3	350	950	21
W. G. Fishburn,		54,283	472	527	55,282			61	96			652	490	12
Wm. Casker,		19,040	336	123	19,499			210	44			35		6
John Hooten,		25,945		224	26,169			111	50			200		5
Samuel Styre,		14,907	11	1,799	16,717			190	54			90		3
Alder Run Colliery Co.,		17,907	69	106	18,082		30	180	44			216	11	3
Adams & Co.,		58,906			58,906			257	80			200		7
Thos. J. Lee & Co., Ltd., and Lee Coal Co.,		11,754		134	11,888			117	20					5
Coaldale Mining Co.,		29,248			29,248			164	57	1		40		7
W. J. Davis,		11,963		126	12,089			145	23			60		3
John Walton & Son,		8,184	11	28	8,223			178	13			20	5	3
H. M. Hughes & Son,		4,895		73	4,968			69	15					2
J. & H. W. Todd Bros.,		81,413		610	82,023			153	142		1	420		18
Mapleton Coal Co.,		5,069			5,060			88	23			23		5

Meadow Brook Mining Co.,		506	201	112	819			200	9			40	100	4
J. R. Brown & Co.,		10,449			10,449			151	29			51	25	5
Hilling, Lamb & Co.,		2,960		28	2,988			96	11			30		1
W. F. Holt,		8,762			8,762			157	14					4
Stratton Bros.,		6,675		56	6,731			140	11			75		2
Penn Iron Co.,		18,081	123	52	18,256			190	40			173		5
L. Milton Wilson,		30,387		97	30,484			141	51			187	150	7
Townsend & Wilson,		8,885			8,885			120	17			16		3
Walker & Gleason,		2,718			2,718			121	12			15		1
Jas. F. Stott,		5,600		56	5,656			182	18			25	100	3
Lawton & Cox,		3,301		5	3,306			53	30		1	45	150	7
J. Mountz,		9,142			9,142			98	37					4
Chas. D. Loraine,		11,574			11,574			197	24					3
J. R. Flenner & Co.,		6,456		1	6,457			103	37			40	100	1
Victoria Mining Co.,		119,928	4,990	210	125,128			221	204					19
Grand total,		3,319,083	45,976	13,579	3,383,284	2,550	136	153	6,115	3	23	15,150	5,370	635

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*Production and other data for single collieries will be found in the recapitulation.
†Average.

TABLE II—Continued.

Names of Operators and Collieries.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Berwind-White Coal Mining Co.,		13	470	24	1,892	2,362				37	2,300	26	9,978		6	1
Morrisdale Coal Mining Co.,		1	40	8	1,060	1,100			2	14	930	3	1,850	1,850	1	3
Peale, Peacock & Kerr, Inc.,				4	275	525			4	4	450				2	1
G. L. Whitehead Coal Co.,																
Cambria Coal Mining Co.,				2	80	80				2	30	1	200	200		
W. A. Gould & Bro. & Reakert Bro. & Co.,																
Henry Liveright,																
J. Swires and Ophir Coal Co.,		2	50	2	80	130				3	60	3	800			
Forest Coal Mining Co.,				1	80	80									1	
Irish Bros & Co.,				2	60	120				4	120	1	200	150		
John G. Platt Coal Mining Co.,																
Henrietta Coal Co., Ltd.,																
O. L. Schoonover,																
Moshannon Coal Mining Co.,																
American Union Coal Co.,																
John Barnes & Sons,																
Beech Creek Coal & Coke Co.,				2	125	250				3	150	3	1,500		1	
M. & F. Craig,																
Blair Bros.,				2	160	160										
Thomas C. Heims & Co.,																
Brown & Dwyer,																
Harbison Walker Co.,							1				100					
Betz Coal Mining Co.,																
Thomas Blythe,																
Ghem Coal Co.,																
Beulah Coal Co.,				1	40	40				1	60					
W. G. Fishburn,				2	50	50	1			2	42	3	533			
Wm. Casker,		1	40	1	30	70				2	20	2	220	220		
John Hooten,																
Samuel Styre,																
Alder Run Colliery Co.,																

Adams & Co.,																
Thos. J. Lee & Co., Ltd., & Lee Coal Co.,																
Coaldale Mining Co.,																
W. J. Davis,																
John Walton & Son,																
H. M. Hughes & Son,																
J. & H. W. Todd Bros.,																
Mapleton Coal Co.,																
Meadowbrook Mining Co.,				1	100											1
J. R. Brown & Co.,																
Hilling, Lamb & Co.,																
W. F. Holt,																
Stratton Bros.,																
Penn Iron Co.,																
L. Milton Wilson,																
Townsend & Wilson,																
Walker & Gleason,																
Jas. F. Stott,																
Lawton & Cox,																
J. Mountz,																
Chas. D. Loraine,																
J. R. Flenner & Co.,																
Victoria Mining Co.,				6	60	360				3	275	5	2,100	800		
Grand total,		17	600	58	4,092	5,327	2		6	75	4,537	47	17,381	3,220	11	6

TABLE III—Showing the number of each class of employes at each colliery in the Eighth Bituminous District during the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.							Occupations of Persons Employed Outside.							Grand total, inside and outside.
		Inside foremen or mine bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Berwind-White Coal Mining Co.																
Atlantic No. 1,	Clearfield,	1	146	2	8	1	10	168	......	2	5	......	2	5	14	182
Eureka No. 5,	Clearfield,	1	66	17	5	......	3	92	......	1	4	......	1	3	9	101
Eureka No. 7,	Clearfield,	1	129	......	7	4	6	147	......	1	3	......	2	4	10	157
Eureka No. 16,	Clearfield,	1	55	4	4	......	4	68	......	1	2	......	1	5	9	77
Eureka No. 18,	Clearfield,	1	33	3	2	1	3	43	......	1	......	......	1	1	3	46
Eureka No. 19,	Clearfield,	2	128	......	2	1	5	138	......	1	3	1	1	3	9	147
Eureka No. 21,	Centre,	1	47	4	3	1	1	57	......	......	......	......	1	2	3	60
Eureka No. 22,	Clearfield,	2	160	5	6	1	4	178	......	2	2	1	3	4	12	190
Eureka No. 24,	Clearfield,	1	34	2	4	......	1	42	......	1	1	......	1	......	3	45
Eureka No. 27,	Clearfield,	1	42	4	1	......	2	50	......	1	......	......	1	1	3	53
Eureka No. 28,	Clearfield,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Total,		12	840	41	42	9	39	983	......	11	20	2	14	28	75	1,058
The Morrisdale Coal Co.																
Morrisdale No. 1 shaft,	Clearfield,	2	240	......	16	11	41	310	1	3	6	1	6	9	26	336
Morrisdale No. 2 shaft,	Clearfield,	1	92	......	9	2	20	124	1	2	4	1	......	3	11	135
Morrisdale No. 4,	Clearfield,	......	9	......	1	......	......	10	......	......	......	......	......	......	......	10
Morrisdale No. 6,	Clearfield,	1	30	......	2	......	......	33	......	......	......	......	......	......	......	33
Morrisdale No. 8,	Clearfield,	......	9	......	1	......	......	10	......	......	......	......	......	......	......	10
Mabel,	Clearfield,	1	12	......	1	1	......	15	......	......	......	......	......	1	1	16
Troy Nos. 1 and 2,	Clearfield,	1	33	......	2	1	......	37	......	......	......	......	......	......	......	37

Troy No. 4,	Clearfield,	1	10	......	1	1	......	13	......	......	......	......	......	......	......	13
Morrisdale No. 7,	Clearfield,	......	9	......	1	......	......	10	......	......	......	......	......	......	......	10
Total,	......	7	444	......	34	16	61	562	2	5	10	2	6	13	38	600
Peale, Peacock & Kerr, Inc.																
Decatur No. 1,	Clearfield,	......	43	......	3	......	1	47	......	......	......	......	......	2	2	49
Decatur No. 2,	Clearfield,	1	71	......	5	1	......	78	......	1	......	1	......	3	5	83
Decatur No. 3,	Clearfield,	1	174	......	7	3	......	185	......	3	3	1	2	6	15	200
Decatur No. 4,	Clearfield,	1	50	......	3	1	1	56	......	......	......	1	......	1	2	58
Ogle Nos. 1 and 5,	Clearfield,	2	240	5	8	5	......	260	......	3	3	2	1	13	22	282
Total,	......	5	578	5	26	10	2	626	......	7	6	5	3	25	46	672
G. L. Whitehead Coal Co.																
Standard No. 1,	Centre,	1	39	......	2	......	......	42	......	......	......	......	1	......	1	43
Standard No. 2,	Centre,	1	6	......	1	......	......	8	......	......	......	......	......	......	......	8
Standard No. 3,	Centre,	1	6	......	1	......	......	8	......	......	......	......	......	......	......	8
Standard No. 4,	Clearfield,	1	38	4	2	......	......	45	......	......	......	......	......	......	......	45
Standard Nos. 5 and 7,	Clearfield,	1	25	......	2	......	......	28	......	......	......	......	......	......	......	28
Standard No. 9,	Clearfield,	1	3	......	1	......	......	5	......	......	......	......	......	......	......	5
Total,	......	6	117	4	9	......	......	136	......	......	......	......	1	......	1	137
Cambria Coal Mining Co.																
Leland No. 1,	Clearfield,	1	85	2	6	1	......	95	1	2	2	1	2	4	12	107
Leland No. 2,	Clearfield,	1	8	......	1	......	......	10	......	......	......	......	1	......	1	11
Leland No. 3,	Clearfield,	1	7	1	1	1	......	11	1	......	......	......	1	......	2	13
Leland No. 6,	Clearfield,	1	18	1	2	1	......	23	1	1	1	1	1	1	6	29
Total,	......	4	118	4	10	3	......	139	3	3	3	2	5	5	21	160
W. A. Gould & Bro.																
Henderson No. 4,	Clearfield,	1	10	......	1	......	......	12	......	......	......	......	......	......	......	12
Henderson No. 5,	Clearfield,	1	15	......	1	......	......	17	......	......	......	......	......	......	......	17
Midvale No. 1,	Clearfield,	1	30	......	3	......	......	34	......	......	......	......	......	......	......	34
Midvale No. 2,	Clearfield,	1	31	......	3	1	......	36	......	......	......	......	......	......	......	36
Reakert Bros. & Co., W. A. Gould, Contractor.																
Loraine,	Clearfield,	1	73	......	5	1	......	80	......	1	......	......	......	......	1	81
Total,	......	5	159	......	13	2	......	179	......	1	......	......	......	......	1	180
Henry Liveright.																
Fairmont No. 2,	Clearfield,	1	36	1	3	......	......	41	1	......	......	......	1	......	2	43
Fairmont No. 3,	Clearfield,	......	8	......	......	......	......	8	1	......	......	......	......	......	1	9
Fairmont No. 4,	Clearfield,	1	8	......	......	......	......	9	1	......	......	......	1	......	2	11
Phoenix,	Centre,	1	27	......	2	......	......	30	......	......	......	......	1	......	1	21
Total,	......	3	79	1	5	......	......	88	3	......	......	......	3	......	6	94

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.							Occupations of Persons Employed Outside.							Grand total, inside and outside.
		Inside foremen or mine bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
J. Swires and Ophir Coal Co.																
Ashman,	Clearfield,	1	62	......	4	1	1	69	......	1	......	1	3	1	6	75
Ghem,	Clearfield,	1	64	......	3	......	1	69	......	1	2	......	3	2	8	77
Ophir No. 1,	Centre,	1	65	......	4	2	2	74	......	1	......	1	3	2	7	81
Royal,	Clearfield,	1	80	......	6	......	4	91	......	1	3	1	3	2	10	101
Total,		4	271	......	17	3	8	303	......	4	5	3	12	7	31	334
Irish Bros. & Co.																
Baltic Nos. 1 and 3,	Clearfield,	1	65	......	6	2	6	80	......	1	......	......	2	1	4	84
Colorado Nos. 3 and 4,	Clearfield,	1	76	......	7	2	9	95	......	1	2	1	1	3	8	103
Red Jacket,	Clearfield,	1	45	......	3	2	6	57	......	1	......	......	1	1	3	60
Total,		3	186	......	16	6	21	232	......	3	2	1	4	5	15	247
Forest Coal Mining Co.																
Hobson,	Clearfield,	1	7	......	1	......	......	9	......	......	......	......	......	......	......	9
Falcon No. 1,	Clearfield,	1	21	......	2	......	......	24	......	......	......	......	......	1	1	25
Falcon No. 2,	Clearfield,	1	41	......	......	......	3	45	......	1	1	......	2	1	5	50
Falcon No. 3,	Clearfield,	1	23	......	1	......	......	25	......	......	......	......	......	......	......	25
Total,		4	92	......	4	......	3	103	......	1	1	......	2	2	6	109
John G. Platt Coal Mining Co.																
Colorado No. 2,	Clearfield,	1	18	1	2	......	......	22	......	1	......	......	1	1	3	25

Cuba,	Clearfield,	1	18	1	2	......	......	22	......	1	......	......	1	1	3	25
Gulon,	Clearfield,	1	17	1	2	1	......	22	......	1	......	......	1	1	3	25
Total,		3	53	3	6	1	......	66	......	3	......	......	3	3	9	75
Henrietta Coal Co., Ltd.																
Henrietta,	Clearfield,	1	47	......	3	......	1	52	1	......	......	......	......	1	2	54
Friendship,	Clearfield,	......	8	......	1	......	......	9	......	......	......	......	......	1	1	10
Total,		1	55	......	4	......	1	61	1	......	......	......	......	2	3	64
O. L. Schoonover.																
Forest No. 1,	Clearfield,	1	27	1	3	......	......	32	1	1	......	1	1	......	4	36
Forest No. 2,	Clearfield,	......	17	......	3	......	......	20	1	......	......	......	......	......	1	21
Total,		1	44	1	6	......	......	52	2	1	......	1	1	......	5	57
Moshannon Coal Mining Co.																
Moshannon No. 1,	Clearfield,	1	19	......	3	1	1	25	1	......	......	......	2	......	3	28
Moshannon No. 2,	Clearfield,	......	8	......	1	......	......	9	......	......	......	......	......	......	......	9
Moshannon No. 3,	Clearfield,	......	6	......	1	......	......	7	......	......	......	......	......	......	......	7
Total,		1	33	......	5	1	1	41	1	......	......	......	2	......	3	44
American Union Coal Co.																
Mt. Vernon No. 7,	Clearfield,	1	21	......	1	......	3	26	......	......	......	......	2	......	2	28
Mt. Vernon No. 11,	Clearfield,	1	38	......	1	......	2	42	......	1	......	......	......	......	1	43
Total,		2	59	......	2	......	5	68	......	1	......	......	2	......	3	71
John Barnes & Sons.																
Lancashire Nos. 2 and 3,	Clearfield,	1	25	......	3	1	......	30	1	......	......	......	2	......	3	33
Beech Creek Coal & Coke Co.																
Summerville No. 8,	Clearfield,	1	145	4	10	3	8	171	1	3	2	2	2	8	18	189
M. and F. Craig.																
Sterling No. 2,	Clearfield,	1	25	......	2	......	......	28	......	......	......	......	1	......	1	29
Sterling No. 3,	Clearfield,	1	26	......	2	......	......	29	......	......	......	......	......	1	1	30
Total,		2	51	......	4	......	......	57	......	......	......	......	1	1	2	59
Blair Bros.																
Orient Nos. 1 and 2,	Centre,	1	52	......	2	2	1	58	1	1	......	1	2	2	7	65
Thos. C. Helms & Co.																
Electric,	Centre,	1	36	......	3	......	......	40	......	1	......	2	......	1	4	44
Lenore,	Clearfield,	1	53	......	4	......	......	58	......	1	......	......	1	1	3	61
Total,		2	89	......	7	......	......	98	......	2	......	2	1	2	7	105

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.							Occupations of Persons Employed Outside.							Grand total, inside and outside.
		Inside foremen or mine bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Brown & Dwyer.																
Union No. 3,	Centre,	1	11	......	1	......	......	13	......	......	......	......	1	....	1	14
Union No. 5,	Clearfield,	1	22	1	2	......	......	26	......	......	......	......	1	....	1	27
Total,		2	33	1	3	......	......	39	......	......	......	......	2	....	2	41
Harbison Walker Co.																
Varner,	Clearfield,	1	25	2	......	......	1	29	......	......	1	......	....	2	3	32
Plane,	Clearfield,	1	22	1	......	......	1	25	......	......	......	......	1	....	1	26
Parks,	Clearfield,	1	25	1	......	......	3	30	......	......	1	......	....	2	3	33
Total,		3	72	4	......	......	5	84	......	......	2	......	1	4	7	91
W. G. Fishburn.																
Kyler No. ,1	Clearfield,	1	56	8	6	1	4	76	......	2	1	......	2	6	11	87
Douglas,	Clearfield,	......	6	1	1	......	......	8	......	......	1	......	....	....	1	9
Total,		1	62	9	7	1	4	84	......	2	2	......	2	6	12	96
Betz Coal Mining Co.																
Betz No. 1,	Clearfield,	1	40	......	2	......	1	44	1	2	......	1	1	....	5	49
Betz No. 2,	Clearfield,	......	8	......	1	......	......	9	1	......	......	......	1	....	2	11
Total,		1	48	......	3	......	1	53	2	2	......	1	2	....	7	60

Thos. Blythe. Alexandra,	Clearfield,	1	104	......	5	3	2	115	......	2	......	2	1	....	5	120
Ghem Coal Co. Ghem,	Centre,	1	98	......	5	1	2	107	......	1	......	......	1	2	4	111
Beulah Coal Co. Webster No. 4,	Clearfield,	1	101	......	7	5	6	120	......	2	1	......	2	9	14	134
Wm. Casker. Birdseye,	Clearfield,	1	30	2	4	......	4	41	......	......	2	......	1	....	3	44
J. W. Hootten. Black Diamond No. 1,	Clearfield,	1	40	......	2	1	......	44	......	1	......	......	2	3	6	50
Sam'l Styre. Black Diamond No. 2,	Clearfield,	1	45	......	3	......	2	51	......	......	......	......	3	....	3	54
W. J. Rainey & Co. Belsena No. 3,	Clearfield,	......	....	......	......	......	......	....	......	......	......	......	....	....	....	....
James Gatehouse. Banion,	Clearfield,	......	....	......	......	......	......	....	......	......	......	......	....	....	....	....
Alder Run Colliery Co. Alder Run,	Clearfield,	1	40	......	2	......	......	43	......	......	......	......	1	....	1	44
Adams & Co. Jefferson,	Clearfield,	1	73	......	2	......	......	76	......	1	......	......	2	1	4	80
T. J. Lee & Co., Ltd., and Lee Coal Co., Gearhart,	Clearfield,	......	8	......	1	......	......	9	......	......	......	......	....	....	....	9
Lee,	Clearfield,	1	8	......	1	......	......	10	......	......	......	......	1	....	1	11
Total,	....	1	16	......	2	......	......	19	......	......	......	......	1	....	1	20
Coaldale Mining Co. Coaldale No. 4,	Clearfield,	1	46	......	5	1	......	53	......	1	......	1	1	1	4	57
W. J. Davis. Davis,	Clearfield,	1	18	......	3	......	......	22	......	......	......	......	1	....	1	23
John Walton & Son. London,	Clearfield,	1	10	......	1	......	......	12	......	......	......	......	1	....	1	13
H. M. Hughes & Son. Leader Nos. 1 and 2,	Clearfield,	......	12	......	2	......	......	14	1	......	......	......	....	....	1	15
John and H. W. Todd. Lane Nos. 1 and 2,	Clearfield,	1	121	2	8	1	2	135	1	1	......	......	1	4	7	142
Mapleton Coal Co. Mapleton,	Clearfield,	1	16	1	2	1	1	22	......	......	......	......	1	....	1	23

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.							Occupations of Persons Employed Outside.							
		Inside foremen or mine bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	Grand total, inside and outside.
Meadowbrook Mining Co. Meadowbrook,	Clearfield,	......	7	......	......	......	......	7	......	......	......	......	2	....	2	9
J. R. Brown. Osceola No. 3,	Centre,	1	22	2	1	1	......	27	......	......	......	1	....	1	2	29
Hilling, Lamb & Co. Porter Run,	Clearfield,	1	8	......	1	......	......	9	......	......	......	......	1	....	1	10
Wm. F. Holt & Co. Phoenix,	Clearfield,	1	12	......	1	......	......	14	......	......	......	......	....	....	....	14
Stratton Bros. Kentuck,	Clearfield,	1	8	......	1	......	......	10	......	......	......	......	1	....	1	11
Penn Iron Co. Reading,	Clearfield,	1	32	......	2	1	2	38	......	1	......	......	1	....	2	40
L. Milton Wilson. Schwinn,	Clearfield,	1	33	......	3	2	......	39	1	......	......	......	1	....	2	41
Bear Run,	Centre,	1	7	......	1	......	......	9	1	......	......	......	....	....	1	10
Total,	....	2	40	......	4	2	......	48	2	......	......	......	1	....	3	51

Townsend & Milsom. Shoft No. 2,	Clearfield,	1	13	......	2	......	......	16	......	......	......	......	1	......	1	17
Walker & Gleason. Troy,	Clearfield,	1	8	......	1	......	......	10	......	......	......	......	2	......	2	12
Jas. F. Stott. Ophir No. 2,	Centre,	1	14	......	1	......	......	16	1	......	......	......	1	......	2	18
Lawton & Cox. White Oak,	Clearfield,	1	23	......	1	......	4	29	......	......	......	1	......	......	1	30
S. J. Mountz. Whiteside Nos. 1 and 2,	Clearfield,	......	32	......	4	......	......	36	......	......	......	......	1	......	1	37
Chas. D. Loraine. West Moshannon,	Clearfield,	1	22	......	1	......	......	24	......	......	......	......	......	......	......	24
J. R. Flenner & Co. Standard No. 4,	Clearfield,	1	35	......	1	......	......	37	......	......	......	......	......	......	......	37
Victoria Mining Co. Acme Nos. 1 and 2,	Clearfield,	1	174	......	10	3	5	193	1	2	4	2	2	......	11	204

Recapitulation

Berwind-White Coal Mining Co.,	......	12	840	41	42	9	39	983	......	11	20	2	14	28	75	1,058
Morrisdale Coal Mining Co.,	......	7	444	......	34	16	61	562	2	5	10	2	6	13	38	600
Peale, Peacock & Kerr, Inc.,	......	5	578	5	26	10	2	626	......	7	6	5	3	25	46	672
G. L. Whitehead Coal Co.,	......	6	117	4	9	......	......	136	......	......	......	......	1	......	1	137
Cambria Coal Mining Co.,	......	4	118	4	10	3	......	139	3	3	3	2	5	5	21	160
W. A. Gould & Bro. and Reakert Bros. & Co.,	......	5	159	......	13	2	......	179	......	1	......	......	......	......	1	180
H. Liveright,	......	3	79	1	5	......	......	88	3	......	......	......	3	......	6	94
J. Swires and Ophir Coal Co.,	......	4	271	......	17	3	8	303	......	4	5	3	12	7	31	334
Irish Bros & Co.,	......	3	186	......	16	6	21	232	......	3	2	1	4	5	15	247
Forest Coal Mining Co.,	......	4	92	......	4	......	3	103	......	1	1	......	2	2	6	109
John G. Platt Coal Mining Co.,	......	3	53	3	6	1	......	66	......	3	......	......	3	3	9	75
Henrietta Coal Co., Ltd.,	......	1	55	......	4	......	1	61	1	......	......	......	......	2	3	64
O. L. Schoonover,	......	1	44	1	6	......	......	52	2	1	......	1	1	......	5	57
Moshannon Coal Mining Co.,	......	1	33	......	5	1	1	41	1	......	......	......	2	......	3	44
American Union Coal Co.,	......	2	59	......	2	......	5	68	......	1	......	......	2	......	3	71
John Barnes & Sons,	......	1	25	......	3	1	......	30	1	......	......	......	2	......	3	33
Beech Creek Coal and Coke Co.,	......	1	145	4	10	3	8	171	1	3	2	2	2	8	18	189
M. and F. Craig,	......	2	51	......	4	......	......	57	......	......	......	......	1	1	2	59
Blair Bros.,	......	1	52	......	2	2	1	58	1	1	......	1	2	2	7	65
Thos. C. Helms & Co.,	......	2	89	......	7	......	......	98	......	2	......	2	1	2	7	105
Brown & Dwyer,	......	2	33	1	3	......	......	39	......	......	......	......	2	......	2	41
Harbison Walker Co.,	......	3	72	4	......	......	5	84	......	......	2	......	1	4	7	91
W. G. Fishburn,	......	1	62	9	7	1	4	84	......	2	2	......	2	6	12	96

Recapitulation—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.							Occupations of Persons Employed Outside.							Grand total, inside and outside.
		Inside foremen or mine bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Betz Coal Mining Co.,	......	1	48	......	3	......	1	53	2	2	......	1	2	......	7	60
Thos. Blythe,	......	1	104	......	5	3	2	115	......	2	......	2	1	......	5	120
Ghem Coal Co.,	......	1	98	......	5	1	2	107	......	1	......	......	1	2	4	111
Beulah Coal Co.,	......	1	101	......	7	5	6	120	......	2	1	......	2	9	14	134
Wm. Casker,	......	1	30	2	4	......	4	41	......	......	2	......	1	......	3	44
J. W. Hootten,	......	1	40	......	2	1	......	44	......	1	......	......	2	3	6	50
Samuel Styre,	......	1	45	......	3	......	2	51	......	......	......	......	3	......	3	54
Alder Run Colliery Co.,	......	1	40	......	2	......	......	43	......	......	......	......	1	......	1	44
Adams & Co.,	......	1	73	......	2	......	......	76	......	1	......	......	2	1	4	80
T. J. Lee Coal Co., Ltd., and Lee Coal Co.,	......	1	16	......	2	......	......	19	......	......	......	......	1	......	1	20
Coaldale Mining Co.,	......	1	46	......	5	1	......	53	......	1	......	1	1	1	4	57
W. J. Davis,	......	1	18	......	3	......	......	22	......	......	......	......	1	......	1	23
John Walton & Son,	......	1	10	......	1	......	......	12	......	......	......	......	1	......	1	13
H. M. Hughes & Son,	......	......	12	......	2	......	......	14	1	......	......	......	......	......	1	15
John and H. W. Todd,	......	1	121	2	8	1	2	135	1	1	......	......	1	4	7	142
Mapleton Coal Co.,	......	1	16	1	2	1	1	22	......	......	......	......	1	......	1	23
Meadowbrook Mining Co.,	......	......	7	......	......	......	......	7	......	......	......	......	2	......	2	9
J. R. Brown,	......	1	22	2	1	1	......	27	......	......	......	1	......	1	2	29
Hiling, Lamb & Co.,	......	1	8	......	1	......	......	10	......	......	......	......	1	......	1	11
W. F. Holt & Co.,	......	1	12	......	1	......	......	14	......	......	......	......	......	......	......	14
Stratton Bros.,	......	1	8	......	1	......	......	10	......	......	......	......	1	......	1	11
Penn Iron Co.,	......	1	32	......	2	1	2	38	......	1	......	......	1	......	2	40
L. Milton Wilson,	......	2	40	......	4	2	......	48	2	......	......	......	1	......	3	51
Townsend & Milsom,	......	1	13	......	2	......	......	16	......	......	......	......	1	......	1	17

Walker & Gleason,	......	1	8	......	1	......	......	10	......	......	......	......	2	......	2	12
Jas. F. Stott,	......	1	14	......	1	......	......	16	1	......	......	......	1	......	2	18
Lawton & Cox,	......	1	23	......	1	......	4	29	......	......	......	1	......	......	1	30
S. J. Mountz,	......	......	32	......	4	......	......	36	......	......	......	......	1	......	1	37
Chas. D. Loraine,	......	1	22	......	1	......	......	24	......	......	......	......	......	......	......	24
J. R. Flenner & Co.,	......	1	35	......	1	......	......	37	......	......	......	......	......	......	......	37
Victoria Mining Co.,	......	1	174	......	10	3	5	193	1	2	4	2	2	......	11	204
Grand total,	......	103	4,925	84	322	78	190	5,702	23	62	60	29	105	134	413	6,115

TABLE III—Continued.

Names of Operators and Collieries.	County.	Number of Days Worked in Each Month.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Berwind-White Coal Mining Co.,	....	15.7	10.4	13.4	16.5	18.3	13	10.5	9.5	8.6	9.6	9.8	7.7	....
Morrisdale Coal Mining Co.,	....	17.3	19.4	21.6	16.3	14.9	11.3	17.7	14.8	14.6	14.3	16.7	15.6	....
Peale, Peacock & Kerr, Inc.,	....	20.8	19.4	24.8	20.6	23	22.6	21	16.4	13.6	15.2	22.2	18.2	....
G. L. Whitehead Coal Co.,	....	19.3	12.5	16.8	14.3	12.6	11.1	15.3	13.8	16.6	16.1	14.6	11.5	....
Cambria Coal Mining Co.,	....	17.5	13.5	18	14.5	9.2	7.2	13.7	7	12.7	11.5	11.5	8.2	....
W. A. Gould & Bro. and Reakert Bros. & Co.,	....	15	11.6	16.2	15.6	12	11.6	14.6	14.2	14.2	17	16.6	10	....
H. Liveright,	....	12.5	9.2	13.2	9.2	7.75	8.7	9	7.2	11.75	14.7	11	15	....
J. Swires and Ophir Coal Co.,	....	18	12	13.7	14	9.5	7.5	9.2	8.5	8.7	6.2	12.2	11.7	....
Irish Bros. & Co.,	....	25.6	22.3	23	16.6	17.3	13.3	19	18	19	23.3	21.3	22.3	....
Forest Coal Mining Co.,	....	7.2	7	7.7	7.2	10.7	10.7	10.7	14.7	12	12	12.2	12.5	....
John G. Platt Coal Mining Co.,	....	8.3	8.3	8.3	8	8	4.3	3.6	3.3	3.6	3.6	2.6	3.3	....
Henrietta Coal Co., Ltd.,	....	9	10.5	9.5	8.5	9.5	9.5	9.5	9.5	8.5	7	10	11	....
O. L. Schoonover,	....	15	11.5	15	11	3	....	....	1	4	8	8	7.5	....
Moshannon Coal Mining Co.,	....	11.3	10.3	8	11.6	11.6	8.6	6.6	8.6	12	15	9.3	16.3	....
American Union Coal Co.,	....	18.5	10.5	18	13	11.5	9	11.5	10.5	9.5	7	8.5	12.5	....
John Barnes & Sons,	....	16	9	17	11	9	13	1	12	17	22	15	15	....
Beech Creek Coal and Coke Co.,	....	18	18.5	20.5	19	14.2	20.75	21	20.75	20.2	24.5	23	18.75	....
M. & F. Craig,	....	13.5	11.5	13	14	10	15	12.5	12.5	10	10	10	13	....
Blair Bros.,	....	20	20	20	20	18	17	17	21	24	23	22	18	....
Thos. C. Heims & Co.,	....	11.5	10	15.5	13	8	8.5	9.5	14.5	12	18.5	15.5	16.5	....
Brown & Dwyer,	....	16.5	11	15	15	12.5	15.5	15	9.5	11	11.5	12.5	19	....
Harbison Walker Co.,	....	20.5	19.5	20.5	21	21	15.5	20.5	20.5	20.5	20.5	22.5	22.5	....
W. G. Fishburn,	....	10	7.5	4.5	3.5	1.5	1.5	2	2	8	10	7.5	4	....
Betz Coal Mining Co.,	....	....	10	17	13	16	18	13	11	13	15	17.5	18	....
Thos. Blythe,	....	22.25	16	23.25	19.25	16	20.75	17.75	17.25	14.75	16.5	20.75	22.25	....
Ghem Coal Co.,	....	23.75	22	20.5	17.25	17.75	23	20.75	21	18.5	21.25	22.5	23	....
Beulah Coal Co.,	....	18.25	10.5	17.5	8.7	6	6.2	9	4.2	8.75	7.25	11.25	12.75	....
Wm. Casker,	....	21	21	9	10	20	11	12	14	21	23	24	24	....
J. W. Hootten,	....	23	18	9.5	11.75	2	5	2	4	8	7	13	8	....
Samuel Styre,	....	12	7	13	11	19	19	22	13	16	19	20	19	....
Alder Run Colliery Co.,	....	16.5	12.75	17.75	9.5	12.5	7.5	16	18.5	17.25	21.75	13.75	17	....
Adams & Co.,	....	22	21	26	21	19	22	23	21	19	23	18	22	....
T. J. Lee Coal Co., Ltd., and Lee Coal Co.,	....	6.5	9.5	15	11	12.5	5.5	12.5	9.5	11	3	7	14.5	....
Coaldale Mining Co.,	....	....	....	....	23	17	24	20	14	18	18	15	15	....
W. J. Davis,	....	8	12	18	13	20	9	8	18	16	....	6	17	....

John Waltón & Son,	......	19	3	15	6	7	19	23	16	17	16	18	19	......
H. M. Hughes & Son,	......	9	4	8	9	7	5	2	......	2	6	6	11	......
John and H. W. Todd,	......	21.5	14	21	17.5	2	5	17.5	15.5	12	6.5	10.5	10.5	......
Mapleton Coal Co.,	......	......	......	......	......	......	......	17	12	14	19	13	13	......
Meadowbrook Mining Co.,	......	20	20	18	22	15	15	10	15	14	15	20	16	......
J. R. Brown,	......	17	16	17	13	10	11	9	6	10	12	14	16	......
Hilling, Lamb & Co.,	......	13	5	18	8	10	......	10	5	7	6	5	9	......
W. F. Holt & Co.,	......	11	14	20	13	20	18.5	22	10	11	......	8	10	......
Stratton Bros.,	......	20	4	10	12	2	3	8	8	15	12	23	23	......
Penn Iron Co.,	......	26.5	20	21	21	16	16	......	......	11	22	16	21	......
L. Milton Wilson,	......	9.5	14	8.5	16	14	12	11	13	10	12	10	11.5	......
Townsend & Milsom,	......	18	14	16	8	12	9	11	12	3	7	4	6	......
Walker & Gleason,	......	6	6	14	7	4	10	9	11	5	20	16	13	......
Jas. F. Stott,	......	23	15.25	20.5	12	10.5	9.75	15	8	18	10	19	21	......
Lawton & Cox,	......	......	......	......	......	......	9	8.2	11	4.5	7	13.2	......	......
S. J. Mountz,	......	12	4	10	8	4	7	12	5	5	7	7	17	......
Chas. D. Loraine,	......	......	20	17	21	24	13	19	21	18	16	13	15	......
J. R. Flenner & Co.,	......	......	......	......	......	6	14	13	12	18	16	11	13	......
Victoria Mining Co.,	......	17	20	21	17	14	13	21	20	17	23	25	13	*221

*Average.

TABLE IV—List of fatal accidents that occurred in and about the the mines of the Eighth Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Feb.	28	Albert Edw. Mathias..	English, ...	Miner boy, ...	14	S.	...	....	Morrisdale No. 1 shaft	Clearfield,.	Fatally injured by mine cars.
June	3	Adolph Colander, ...	Swede, ...	Miner, ...	50	M.	1	4	Coaldale No. 4,........	Clearfield,.	Fatally injured by a fall of coal.
Aug.	31	Edward Shink, ...	German, ...	R. R. car shifter.	28	M.	1	....	Ogle No. 5, ...	Clearfield,.	Fatally injured by having been run over by a railway car.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Eighth Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	13	Patrick Duggan,	Irish,	Miner,	55	M.	Lenore,	Clearfield,	Injured by a fall of slate.
	23	Willard Anderson,	Swede,	Miner,	22	S.	Morrisdale No. 1 shaft,	Clearfield,	Injured by a fall of slate.
	31	Wm. Bromalaw,	English,	Miner,	48	M.	Lane,	Clearfield,	Injured by a fall of slate.
Feb.	12	Frank Diluco,	Italian,	Miner boy,	14	S.	Morrisdale No. 2 shaft,	Clearfield,	Fall of coal.
	14	Mike Ratscho,	Slav,	Miner,	25	M.	Decatur No. 3,	Clearfield,	Fall of slate.
March	4	Lorenzo Baughman,	American,	Miner,	61	M.	Ghem,	Centre,	Fracture of leg by fall of coal.
	12	Martin Gable,	American,	Miner,	47	M.	Webster No. 4,	Clearfield,	Fracture of leg by fall of roof.
	12	Chas. Miller,	American,	Miner,	25	M.	Webster No. 4,		
	26	Thomas Minto,	American,	Driver,	22	S.	Eureka No. 24,	Clearfield,	Injured by cars.
April	4	Charles Carlson,	Swede,	Driver,	28	S.	Summerville No. 8,	Clearfield,	Injured by cars.
May	2	Paul Bonyack,	Slav,	Miner,	28	M.	Eureka No. 19,	Clearfield,	Injured by fall of rock.
June	26	Morgan Lewis,	American,	Driver,	27	M.	Eureka No. 16,	Clearfield,	Injured by cars.
July	9	Mike Chismas,	Slav,	Miner,	37	M.	Webster No. 4,	Clearfield,	Leg dislocated by fall of roof.
	10	Harry Coonrod,	American,	Miner,	18	S.	Morrisdale No. 1 shaft,	Clearfield,	Leg fractured by fall of roof.
	18	John A. Roach,	American,	Driver,	24	M.	Ghem,	Centre,	Leg fractured by cars.
Sept.	4	Paul Bonyack,	Slav,	Miner,	28	M.	Eureka No 19,	Clearfield,	Leg fractured by fall of roof.
	21	Mike Turpick,	Slav,	Miner,	19	S.	Morrisdale No. 1 shaft,	Clearfield,	Leg fractured by fall of roof.
Oct.	10	Tony Deankloe,	Italian,	Miner,	35	S.	Ashman,	Clearfield,	Injured by cars.
	19	A. J. Lovegrin,	Swede,	Miner,	30	S.	Summerville No. 8,	Clearfield,	Injured by cars.
Nov.	6	William Harris, Sr.,	English,	Miner,	65	M.	Morrisdale No. 2 shaft,	Clearfield,	Injured by a fall of coal.
	20	John Laditski,	Hungarian,	Miner,	35	M.	Ogle No. 1,	Clearfield,	Injured by a fall of roof.
Dec.	13	Thomas Pearson,	English,	Miner,	60	S.	White Oak,	Clearfield,	Injured by a fall of bone coal.
	23	Robt McClimat,	Scotch,	Miner,	29	M.	Decatur No. 4,	Clearfield,	Injured by a fall of coal.

Ninth Bituminous District.

FAYETTE, ALLEGHENY, SOMERSET, BEDFORD, AND WESTMORELAND COUNTIES.

Connellsville, March 25, 1902.

Hon. James W. Latta, Secretary of Internal Affairs:

Sir: I have the honor of herewith submitting my annual report as Inspector of mines of the Ninth Bituminous District for the year ending December 31, 1901.

The quantity of coal mined was 9,144,543 tons, or 1,562,789 tons more than was mined in 1900. A change having been made in the districts accounts for the difference. The quantity of coke produced was 2,815,541 tons, or 584,388 tons more than in 1900. The change in the district accounts for this difference also, but this was a very prosperous year for mining. The number of fatal accidents was forty-one, or twenty more than for the previous year, and there were five more non-fatal accidents than in 1900. Twenty-four wives were made widows and fifty children made orphans by these casualties.

A brief description of the accidents is given with the causes. The mines are all in a fairly good condition, except a few in Somerset county, the conditions of which they are trying to remedy.

A description of all the mines in the district will be found with the statistical tables in their respective places. All of which is respectfully submitted.

BERNARD CALLAGHAN,
Inspector.

Summary of Statistics for 1901.

Number of mines in the district,	77
Number in operation during 1901,	73
Number of tons of coal produced,	9,144,543
Number of tons produced by pick mining, approximately,	6,492,876
Number of tons mined by machines,	2,652,667
Number of tons shipped,	5,512,179
Number of tons used for steam at mines,	148,449
Number of tons sold to employes and others,	57,294
Number of coke ovens,	6,284

Number of tons of coke produced,	2,815,541
Number of persons employed inside the mines,	8,916
Number of persons employed outside the mines,	3,081
Number of fatal accidents,	41
Number of tons of coal produced per fatal accident,	223,038
Number of non-fatal accidents,	42
Number of tons of coal produced per non-fatal accident,	217,727
Number of persons employed per fatal accident,	292
Number of persons employed per non-fatal accident,	285
Number of wives made widows,	24
Number of children orphaned,	50
Number of kegs of powder used,	41,531
Number of pounds of dynamite used,	28,936
Number of horses and mules,	1,128
Number of cylindrical boilers in use,	38
Number of tubular boilers in use,	161
Number of steam locomotives in use.	16
Number of air locomotives,	8
Number of electric locomotives,	15
Number of new mines opened,	2
Number of mines abandoned,	1

Production of Coal by Each Company in Tons During the Year 1901.

H. C. Frick Coke Company,	1,916,412
W. J. Rainey,	815,200
Cambria Iron and Steel Company,	395,994
Washington Coal and Coke Company,	824,753
J. R. Laughrey & Son,	151,800
Juniata Coke Company,	199,331
Marietta & Stillwagon,	60,730
Laing Sand and Coal Company,	10,055
Dunbar Furnace Company,	100,014
James Cochran Sons & Co.,	99,321
Brown & Cochran,	314,500
Monongahela R. C. C. & C. Co.,	183,787
United Coal Company,	48,370
Glassport Coal Company,	8,713
James W. Ellsworth & Co.,	245,581
Lake Shore Gas Coal Company,	115,169
Pittsburg Coal Company,	2,069,992
Merchants Coal Company,	209,629
W. K. Niver & Co.,	159,740
Ehlen Brothers,	35,100

Chapman Coal Company,	89,790
Fairview Coal Company,	18,750
Grassy Run Coal Company,	60,565
G. W. Duncombe,	65,324
Continental and Elk Lick,	299,429
H. J. Willmoth,	28,702
Benjamin Thomas,	12,304
Continental Coal Company,	115,660
Cumberland & Summit Coal Company,	131,795
Casselman Coal Company,	64,477
W. A. Merrill & Co.,	41,519
W. D. Althouse & Co.,	73,335
Pine Hill Coal Company,	70,493
Smokeless Coal Company,	30,300
Stoner Coal Company,	15,844
Spiah & Read,	4,563
Enterprise Coal Company,	16,480
Ursina Coal Mining Company,	22,886
Rockwood Coal Mining Company,	6,656
Viaduct Coal Company,	10,920
Savage Fire Brick Company,	460
Total,	9,144,543

The total production was made up as follows:

Somerset,	1,584,278
Fayette,	5,496,092
Allegheny,	1,477,682
Westmoreland,	586,031
Bedford,	460
Total,	9,144,543

Recapitulation.

Shipped to market,	5,512,179
Used for steam and heat at mines,	148,449
Sold to local trade and employes,	57,294
Used for coking,	3,426,621
Total,	9,144,543

TABLE A—Showing Production of Coal, Number of Persons Employed by Each Company During the Year 1901, and the Average Number of Tons Produced per Employe.

Names of Operators.	Number of tons produced.	Number of persons employed.
H. C. Frick Coke Co.,	1,916,412	2,352
W. J. Rainey,	815,200	1,320
Pittsburg Coal Co.,	2,069,992	2,372
Monongahela River Coal Co.,	183,787	343
Washington Run Coal and Coke Co.,	824,753	1,128
J. R. Laughrey & Son,	151,800	93
James Cochran & Co.,	99,321	95
Merchants Coal Co.,	209,629	240
Continental and Elk Lick Coal Co.,	299,429	380
Lake Shore Gas Coal Co.,	115,169	145
James W. Ellsworth & Co.,	245,581	255
United Coal Co.,	48,370	165
Juniata Coke Co.,	199,331	245
Marietta & Stillwagon,	60,730	47
Glassport Coal Co.,	8,713	23
H. J. Willmoth,	28,702	64
W. K. Niver & Co.,	159,740	200
Benjamin Thomas,	12,304	14
Casselman Coal Co.,	64,477	121
Chapman Coal Co.,	89,790	93
Spiah & Read,	4,563	14
W. A. Merrill & Co.,	41,519	74
Stoner Coal Co.,	15,844	25
S. F. B. Co.,	460	7
Rockwood Coal Co.,	6,656	12
W. D. Althouse & Co.,	73,335	127
Cumberland and Summit,	131,795	216
Pine Hill Coal Co.,	70,493	128
Glen McLaren,	115,660	195
Brown & Cochran,	314,500	302
Hamalton Duncombe,	65,324	100
Grassy Run,	60,565	79
Dunbar Furnace Co.,	100,014	148
Ursina Coal Mining Co.,	22,886	70
Cambria Iron Steel Co.,	395,994	614
Laing Sand and Coal Co.,	10,055	14
Williams,	16,480	22
Darlington,	10,920	8
Smokeless Coal Co.,	30,300	40
Fairview Coal Co.,	18,750	24
Ehlen Brothers,	35,100	72
Average production in tons per employe, 762.8,	9,144,543	12,001

TABLE B—Number of Fatal Accidents and Tons of Coal Produced per Life Lost.

Names of Operators.	Number of fatal accidents.	Number of tons of coal produced per life lost.
H. C. Frick Coke Co.,	8	239,551
Pittsburg Coal Co.,	11	188,181
W. J. Rainy,	5	163,181
Cambria Steel Co.,	2	197,997
Washington Run Coal and Coke Co.,	3	274,917
W. A. Merrill,	2	45,757
Monongahela River Coal and Coke Co.,	4	45,946
Brown & Cochran,	1	314,500
Juniata Coke Co.,	1	199,331
Casselman Coal Co.,	1	64,081
W. K. Niver & Co.,	1	159,740
Merchants Coal Co.,	1	219,629
Spiah & Reed Co.,	1	4,563
Total and average,	41	....

TABLE C— Showing the Number of Fatal and Non-Fatal Accidents, and the Number of Tons of Coal Produced per Accident.

Names of Operators.	Number of accidents.	Number of tons of coal produced per accident.
H. C. Frick Coke Co.,	18	106,489
Pittsburg Coal Co.,	21	98,571
W. J. Rainy,	5	163,046
Cambria Steel Co.,	3	131,998
Washington Run Coal and Coke Co.,	4	206,188
W. A. Merrill & Co.,	3	13,839
Monongahela River Consolidated Coal and Coke Co.,	6	30,631
Brown & Cochran,	2	157,250
Juniata Coal Co.,	2	99,665
Casselman Coal Co.,	1	64,081
W. K. Niver & Co.,	3	53,246
Merchant Coal Co.,	2	109,814
Spiah & Reed Co.,	1	4,563
James W. Ellsworth & Co.,	2	122,790
Glen McLaren,	1	115,660
Jas. R. Laughrey & Son,	1	150,000
Fair View Coal Co.,	1	35,100
Cumberland and Summit,	1	131,795
Chapman,	2	44,895
W. D. Althouse & Co.,	2	36,676
Marietta & Stillwagon,	1	60,730
Dunbar Furnace Co.,	1	100,014
Total and average,	83	2,037,041

TABLE D—Classification of Accidents.

Classification of Accidents.	Killed or fatally injured.	Injured.	Total.
Falls of slate,	14	24	34
Coal,	3	....	3
Falls of roof, coal and slate,	18	7	25
Wagons,	6	11	17
Powder,	2	....	2
Electric shock,	1	....	1
Rope, outside,	....	1	1
Total,	41	42	83

TABLE E—Occupations.

Occupations.	Killed or fatally injured.	Injured.	Total.
Miners,	36	32	68
Drivers,	3	5	8
Laborers,	1	2	3
Helper,	1	....	1
Trapper,	....	1	1
Greaser,	....	1	1
Cager,	....	1	1
Total,	41	42	83

TABLE F—Nationalities of Persons Killed and Injured.

Nationalities.	Killed or fatally injured.	Injured.	Total.
Slavs,	13	11	24
Austrians,	2	1	3
Irish,	2	1	3
German,	1	3	4
Americans,	11	14	25
French,	1	....	1
Poles,	1	4	5
Hungarians,	3	3	6
English,	2	3	5
Russians,	....	1	1
Italians,	5	1	6
Total,	41	42	83

Names of Operators.	Name of collieries.	Number of persons employed per day.	Method of ventilation.	Number of separate splits of air.	Cubic feet of air per minute at face of working.	Cubic feet of air at inlet.	Cubic feet of air at outlet.	Number of tons mined by machines.	Power used.	Thickness of seam—feet.	Kind of opening.
H. C. Frick Coke Co.,	Adelaide,	200	Fan,	4	9,000	105,000	108,270			9	Slope.
H. C. Frick Coke Co.,	Henry Clay,	65	Fan,	2	9,750	39,400	41,000			9	Slope.
H. C. Frick Coke Co.,	Davidson shaft,	220	Fan,	4	7,120	71,200	73,420			9	Shaft.
H. C. Frick Coke Co.,	Trotter,	246	Fan,	4	12,400	134,200	135,750			9	Shaft.
H. C. Frick Coke Co.,	Leisenring No. 1,	300	Fan,	6	13,900	100,440	106,420			9	Shaft.
H. C. Frick Coke Co.,	Leisenring No. 3,	320	Fan,	6	12,900	102,480	105,740			9	Shaft.
W. J. Rainey,	Grace,	125	Fan,	2	6,000	44,900	48,270			9	Drift.
W. J. Rainey,	Fort Hill,	190	Fan,	3	7,000	60,300	61,270			9	Drift.
W. J. Rainey,	Paul,	265	Fan,	4	12,000	142,250	144,000			9	Drift.
W. J. Rainey,	Elm Grove,	104	Fan,	3	15,200	32,000	35,000			9	Drift.
Juniata Coke Co.,	Juniata,	114	Fan,	2	14,000	48,000	49,970			9	Shaft.
Washington Coal and Coke Co.,	Washington No. 1,	450	Fan,	10	20,000	139,800	184,000			9	Drift.
Washington Coal and Coke Co.,	Washington No. 2,	270	Fan,	6	15,000	159,850	163,750			9	Drift.
Washington Coal and Coke Co.,	Perry,	75	Fan,	1	7,700	39,400	42,900	134,402	Electricity,	9	Drift.
Cambria Iron and Steel Co.,	Mahoning,	150	Fan,	2	4,200	83,200	86,270			9	Drift.
Cambria Iron and Steel Co.,	Atlas,	100	Fan,	2	2,100	76,270	79,380			9	Drift.
Cambria Iron and Steel Co.,	Morrell,	16	Fan,	1	3,000	3,000	3,000			9	Drift.
Cambria Iron and Steel Co.,	Wheeler,	40	Fan,	1	2,000	5,000	5,000			9	Drift.
Dunbar Furnace Co.,	Ferguson,	85	Fan.	1	10,080	90,000	92,480			9	Drift.
Dunbar Furnace Co.,	Furnace,	18	Fan,	1	4,380	18,000	18,420	22,361	Compressed air,	5	Drift.
James Cochran & Co.,	Clarissa,	50	Furnace,	1	7,000	13,000	14,270			9	Drift.
Brown & Cochran,	Nellie,	180	Fan,	3	16,200	42,000	43,720			9	Drift.
J. R. Laughrey & Son,	Victoria,	80	Fan,	1	12,000	63,640	63.270	131.250	Compressed air,	9	Drift.
Marietta & Stillwagon,	B. & O.,	15	Fan,	1	2,240	12,800	12.900			9	Drift.
Laing & Soisson,	Bassel,	9	Natural,	1	1,000	4,500	4,500			9	Drift.
Pittsburg Coal Co.,	Whitsett,	150	Fan,	2	8,400	36,800	38,420			8	Drift.
Pittsburg Coal Co.,	Banning No. 2,	250	Fan,	4	7,500	74,280	76,000	10,120	Electricity,	8	Drift.
Pittsburg Coal Co.,	Banning No. 2,	16	Fan,	1	9.200	21,200	21,400	185,494	Compressed air,	8	Drift.
Pittsburg Coal Co.,	Wick Haven,	150	Fan,	4	8,400	61,600	62,780	156,815	Compressed air,	8	Shaft.
Pittsburg Coal Co.,	Darr,	290	Fan,	4	14,200	68,750	70.000	342,133	Compressed air,	8	Drift.
Pittsburg Coal Co.,	West Newton,	165	Fan,	2	12,600	28,840	29,100	173,336	Electricity,	7	Shaft.
Pittsburg Coal Co.,	Ocean No. 5,	225	Furnace,	4	10,800	40,000	41,000	153,777	Electricity,	6	Drift.
Pittsburg Coal Co.,	Sarah,	125	Fan,	2	9,000	21,200	21,800	84,195	Electricity,	6	Drift.
Pittsburg Coal Co.,	Ocean No. 2,	200	Fan,	4	11.000	65,780	66,000	320,941	Electricity,	6	Drift.
Pittsburg Coal Co.,	Ocean Nos. 3 & 4,	67	Fan,	1	7,000	9,800	9,840	60,882	Electricity,	5	Drift.
Pittsburg Coal Co.,	Painter & Cornell,	145	Furnace,	2	8,120	23,000	24,320	142,083	Electricity,	5	Drift.

Names of Operators.	Name of collieries.	Number of persons employed per day.	Method of ventilation.	Number of separate splits of air.	Cubic feet of air per minute at face of working.	Cubic feet of air at inlet.	Cubic feet of air at outlet.	Number of tons mined by machines.	Power used.	Thickness of seam—feet.	Kind of opening.
Jas. W. Ellsworth & Co.,	Forrest Hill,	225	Fan,	4	9,720	80,780	82,960	204,551	Electricity,	5	Drift.
Lake Shore Gas Coal Co.,	Dravo,	130	Furnace,	2	2,500	30,000	31,000	100,049	Electricity,	5	Drift.
W. K. Niver & Co.,	Pen-Mar,	175	Fan,	3	3,200	25,200	27,140	103,160	Electricity,	8	Drift.
Ehlen Brothers,	Tub Mill run,	72	Furnace,	2	1,000	12,000	12,960			8	Drift.
Merchants' Coal Co.,	Merchant No. 1,	60	Natural,	1	2,400	8,000	8,000			8	Drift.
Merchants' Coal Co.,	Merchant No. 2,	111	Natural,	2	6,000	34,000	34,280	151,299	Electricity,	8	Drift.
Merchants' Coal Co.,	Merchant No. 3,	69	Fan,	1	2,000	12,000	12,700			8	Drift.
Chapman Coal Co.,	Chapman,	88	Natural,	1	1,800	7,000	7,000			8	Drift.
Grassy Run Coal Co.,	Grassy Run,	74	Natural,	1	1,720	7,200	7,200			8	Drift.
Fair View Coal Co.,	Fairview,	21	Natural,	1	1,400	1,400	1,380			4	Drift.
G. H. Duncombe,	Hamilton,	100	Fan,	2	6,000	40,000	40,720			8	Drift.
Continental Coal Co.,	Glen McLaren,	198	Furnace,	2	7,800	28,000	29,780			8	Drift.
Cumberland & Elk Lick Coal Co.,	Shaws No. 1,	296	Fan,	4	10,200	58,000	59,920			8	Drift.
Cumberland & Elk Lick Coal Co.,	Shaws No. 2,	88	Natural,	1	2,000	5,700	5,700			8	Drift.
H. J. Willmoth,	Willmoth,	64	Natural,	1	2,000	2,800	3,860			8	Drift.
Benjamin Thomas,	Thomas,	14	Natural,	1	2,000	2,000	2,000			8	Drift.
Cumberland and Summit Coal Co.,	Summit,	216	Natural,	4	7,200	17,920	17,920			8 & 4	Drifts.
Casselman Coal Co.,	Casselman,	121	Fan,	2	2,340	5,000	5,000			4	Slope.
W. A. Merrill & Co.,	Enterprise,	74	Furnace,	1	6,800	8,400	8,400			4	Drift.
W. D. Althouse & Co.,	Ponfeigh,	54	Fan,	1	2,800	14,400	15,280			4	Drift.
W. D. Althouse & Co.,	Allegheny,	86	Fan,	2	4,200	21,200	21,320	15,704	Compressed air,	4	Slope.
Pine Hill Coal Co.,	Lottie No. 1,	128	Fan,	2	2,700	18,500	20,090			4	Drift.
Stoner Coal Co.,	Berlin,	25	Furnace,	1	5,400	15,000	15,000			4	Drift.
Grace Coal Co.,	Grace,	32	Furnace,	2	500	1,080	1,080			4	Drift.
Werner & Co.,	Darlington,	7	Natural,	1	400	720	720			3	Drift.
Wolfersberger & Co.,	Rockwood,	12	Natural,	1	2,700	2,700	2,700			4	Drift.
Enterprise Coal Co.,	Williams,	26	Natural,	1	None.	None.	None.			4	Drift.
Spiah & Reed,	Read,	13	Natural,	1	6,000	12,800	12,900			4	Drift.
Ursina Coal Co.,	Rosebud,	70	Natural,	1	10,000	14,000	14,000			6	Drift.
Consolidated Coal and Coke Co.,	Brown's No. 2,	29	Furnace,	4	8,000	37,800	36,400	79,700	Electricity,	5	Drift.
Consolidated Coal and Coke Co.,	Belle Bridge	152	Furnace,	2	6,000	23,000	24,100			5	Drift.
Consolidated Coal and Coke Co.,	Lovedale,	38	Furnace,	1	5,000	20,000	21,000			4	Drift.
Consolidated Coal and Coke Co.,	Gospel,	124	Furnace,	2	9,000	17,000	17,920	41,767	Electricity,	5	Drift.
United Coal Co.,	United,	165	Furnace,	2	9,600	20,000	21,000	38,648	Electricity,	4	Drift.
								2,652,667			

Annual Examination for Mine Foremen and Fire Bosses.

The annual examination of applicants for certificates of qualification for mine foreman and fire bosses was held in Connellsville, January 2, 3 and 4, 1901.

The board of examiners was Bernard Callaghan, Mine Inspector; Clair Stillwagon, superintendent; John Stevenson, mine foreman.

Ninety-four applicants appeared before the board for examination; forty-seven for mine foreman and forty-seven for fire boss, of this number twenty-six passed successfully for mine-foreman, and twenty-seven for fire bosses, who received certificates.

Mine Foremen: David Ainslie, Dunbar; Harry Coll, Connellsville; James M. Murtland, Bradford; Robert Shaw, Uniontown; F. E. King, Leisenring; David Jones, Suterville; Robert Louther, Vanderbilt; Thomas Keef, Trotter; Thomas Gray, Oliver; Patrick McCabe, Leisenring; Richard Clyde, Smithdale; Alfred Jones, Connellsville; Robert Hailes, Mount Pleasant; Patrick King, Leisenring; Dennis Smith, Punxsutawney; William McCleary, Pennsville; C. M. Gates, Leisenring; James W. Lindsay; John L. White, Punxsutawney; William McGregar, Brownsville; Harry Philmore, Ruffsdale; Robert McInnis, Wheeler; Martin Brennan, Blairsville; Samuel Campbell, Latrobe. Second Grade, Patrick Murphy, Whittset.

Fire Bosses: David Laing, Summit; James McMullen, Trotter; Henry Fox, Wick Haven; William Hennessy, Leisenring; Thomas Leman, Vanderbilt; John S. Patterson, Jacobs Creek; Edward Lee, Jacobs Creek; John Payton, Trotter; P. S. Bradley, Dunbar; William J. Kite, Douglass; John Smith, Leisenring; James Welling, Vanderbilt; David Watkins, New Haven; Bart Murphy, Tarrs; Peter Lacey, Oliver; Joseph Morgan, Broad Ford; Jacob Engel, Broad Ford; Thomas Moran; Trotter; P. J. Callaghen, Tarrs; M. J. Doyle, Tarrs; James Pancoast, Smithton; William Ritchie, West Newton; John McDonald, Connellsville; S. B. Steffey, Valley; Martin McNulty, Valley; H. J. McArdle, Broad Ford; John J. Angus, Mount Pleasant.

Remarks on Accidents.

Steve Borts was instantly killed by a fall of slate January 14. He was knocking out posts from under it when a portion of it fell on him.

Michael Carrigan was fatally injured by a truck running over him January 14; he slipped and fell under it; died next day.

George Jubes was instantly killed by a fall of roof, coal and slate February 4. He neglected to properly post the place.

Mike Stullet was instantly killed by a fall of roof February 9. He and his partner were just commencing to knock out the posts when it fell on him. There was no one near but his partner who had to run out of the mine for the mine foreman, and it was some time before he could get enough men to go in the mine, when they found his body.

Joseph Smith was fatally injured March 12, by a fall of coal, roof and slate. He commenced to knock out the posts for the purpose of making a fall but was caught by part of it. He died next day.

Clarence Thompson, driver, was instantly killed March 14, by being run over by cars. It was his custom to go down the entry with the trip and put the wagons in their right places, but he slipped and so lost his life.

Peter Lestrue, miner, was instantly killed April 23, by a fall of roof, while he was knocking out posts. He was considered a very careful miner, but the work of knocking out posts seems to be the cause of the death of a great many men.

Robert Heck was instantly killed April 30, by a fall of roof while knocking out posts.

Joseph Bowden was instantly killed May 20, by a fall of roof and slate. There was a water crack in roof that could not be seen, which allowed it to fall, swinging the posts out.

Adam Subliska was instantly killed May 24, by a fall of slate that he had no reason to be under. The coal was all loaded and this one piece only was to be taken down and moved, and he went under it just as it fell.

Mike Lischo was instantly killed May 31, by a fall of roof while taking out stumps. He and Frank Kosach were working together and they went back to take out a stump, in order to make a fall, and had struck it only a few times when the whole roof fell on them killing them instantly.

John Singek was instantly killed June 6, by a fall of roof, coal and slate. He was taking out pillars on the north side where the coal was greatly squeezed, and it fell so suddenly around him that he did not have time to get out.

Martin Steka, driver, was instantly killed June 10, by being run over by the front wagon of his trip.

Antonia Ferrell was instantly killed June 19, by a fall of slate in his room. It was a very small piece that fell on him, and did not look very dangerous.

Paul Levo was instantly killed June 24, by a fall of slate. The Italians had a big holiday on Sunday, and on Monday he came to the mine and went under slate that he should have known was dangerous.

Mike Kroteka was instantly killed June 24, by a fall of roof. The place seemed to have been sufficiently posted, but the roof was fractured too much for the number of posts he had under it.

Elmer Dagata was instantly killed July 5, by a fall of roof. This was the first fall he had in taking back the pillar, and he was taking out the posts and had nearly all out; he was warned of the danger, but did not heed the warning.

Andy Taska was instantly killed July 9, by a fall of roof and coal. This was carelessness, for he saw the danger.

Ralph Speelman was instantly killed July 9. This happened by the boy standing where he should not have been, and one of the loaded wagons bumped against another knocking it against the rib side where he was standing, killing him instantly.

George Carilla was instantly killed by a fall of roof July 22. He was taking out a back stump and thought he was safe in having a number of posts under the roof, but he had dug only a little off the stump, when it fell on him.

Sander Copeland was instantly killed July 26, by a fall of slate. He was working in an entry, had all the slate taken down but one piece, which he thought was safe. He went under it to do some work when it fell on him.

Joseph Seddenger was fatally injured August 14. This boy was working with his father, and the room adjoining was worked nearly through. The man in the next room drilled a hole on the rib next to them for the purpose of firing a shot; they knew it would be unsafe for them if the shot was fired while they were in their places, but they depended on him to give them warning when he lit the fuse, which he said he did, but the boy was near the place when the shot was fired, which injured him so that he died same day.

Alexander Hampfield was fatally injured August 20, by a fall of slate in his room. This happened by not having the posts set under the slate in the proper places. The posts they depended on were at the edge of it and the weight of the slate swung it over. He died next day.

John Bolish was instantly killed September 5. He was carrying a drill scraper on his shoulder, and came in contact with the live wire.

Salvadore Desmone was instantly killed by a fall of roof September 6. He had the pillar drawn out far enough, but there was a small stump left, and he thought by taking this out it would be complete, but the first stroke of his pick loosened it enough to allow all of the roof to fall on him. It took six hours to get his body out.

John Murry was instantly killed by a loaded wagon on the tipple September 10. The deceased was on the tipple when a wagon was coming down the incline which ran off the track, and in putting it on again it got loose from the rope, and struck another wagon knocking it against Murray, instantly killing him.

Andrew Lazinski was instantly killed by a fall of roof coal September 16. This accident happened when he had his wagon nearly filled, when a piece of coal fell on him.

Cassimer Devedis was instantly killed October 1, by a fall of slate, this happened by his not having sufficient posts under it.

Carl Y. Arithout was instantly killed by a fall of fire clay October 2. In this seam there are two feet of fireclay between two feet of coal above and below, and while taking out some coal on the lower part, a piece of fireclay fell on him.

Latzie Popovish was instantly killed by a fall of slate October 12, for want of sufficient posts being set.

Andy Ferko was fatally injured by a fall of slate October 14. Another case of carelessness in not posting.

John Eardick was instantly killed by a fall of roof October 21. This was considered an unavoidable accident, as every precaution had been used in taking out a pillar.

Andy Olekza was instantly killed by a fall of roof October 21. This was caused by neglect in not posting.

Steve Popobisha was fatally injured by a blown out shot October 26. This accident happened by his not making a proper cartridge; he was putting it in the drill hole when it burst, and having his open light near, some of the powder fell on it, causing it to explode the whole cartridge. He died next day.

Oliver Claigg was instantly killed by a fall of slate November 7. He was preparing to fire a shot, and everything looked safe, but a piece of slate had been cracked over the coal which fell on him.

John Voboschoe was fatally injured November 8, by a fall of roof. He was taking out posts and had nearly all of them out when the roof fell on him injuring him so that he died next day.

Charles McCarty was fatally injured December 12, by being caught between the rib and cars. This accident happened by giving too much force to the brake which caused him to lean too far out. He died eighteen days after.

Robert Walker was fatally injured by a fall of slate December 17. This was an unavoidable accident, as the place seemed safe. He died same day.

Wm. M. Brown was instantly killed December 18. He had fired a shot in the coal and seeing that the roof was unsafe to work under, he commenced to prepare a place for posts, when it fell on him.

Ross Trunce was instantly killed by a fall of slate and coal December 26; it looks as if there had been no precautions taken.

Cottage State Hospital, Connellsville, Pa.

Number in-patients treated from June 1, 1900, June 1, 1901,	385
Number out-patients treated from June 1, 1900, June 1, 1901,	62
Total number patients treated from June 1, 1900, June 1, 1901,	447
Aggregate number of days in-patients treated,	11,359
Number visits of out-patients to hospital,	93
Number patients recovered,	247
Number died,	47
Number improved,	52
Number remaining,	39

The average number of in-patients treated, thirty-one per day.

Of this number, 447, there were ninety-seven miners.

Of this number of miners were eighty-four foreigners and thirteen Americans.

Number in-patients treated since June 1, 1899-June 1, 1900,	342
Number out-patients treated since June 1, 1899-June 1, 1900,	49
Total number of patients treated since June 1, 1899-June 1, 1900,	391
Aggregate number of days in-patients were treated,	9,639
Number visits of out-patients to hospital,	75
Number patients recovered,	251
Number improved,	26
Number died,	29
Number remaining,	36

The average number of in-patients treated, twenty-seven per day.

Of this number, 391, there were 129 miners.

Of this number of miners 114 were foreigners and fifteen were Americans.

Description of Mines.

Mines on the P. & L. E. R. R.

Adelaide.—Is an extensive mine and is in very good condition, both as to ventilation and drainage. The improvements made during the previous year are giving good results.

Fort Hill.—Everything in this mine is in good condition, both as to ventilation and drainage.

Paul.—Is a very extensive mine and needs good care, which it has.

Nellie.—Everything is very favorable in this mine at present. There was a fire from spontaneous combustion about three years ago; the mine was sealed up then, now they are getting the coal out where the fire was and there are no signs of fire. They have made a new opening for haulage purposes, which makes it like a new mine.

Clarissa.—The natural condition of this mine is such that it is enough to say it is all right.

Washington Run Nos. 1 and 2.—These mines are in good condition, as to ventilation and haulage, and produce large outputs of coal.

Victoria.—This is the first year this mine has been worked; it is a new mine and is worked on the same principle as Washington Nos. 1 and 2.

Perry.—Belongs to the same company as Washington Nos. 1 and 2. They purchased it one year ago, and it is being improved fast. They have installed a new fan, which gives good results; drainage is very good.

Whittset.—Formerly called Rainbow. This mine is being improved which will put it in good condition.

Banning No. 2.—Is a new opening, which has been cut into Wick Haven for the purpose of reaching the coal to a better advantage. They have installed a large Capell fan, which will ventilate Whittset and the other two mines.

Wick Haven.—Has had a good record this year, the miners having been careful in taking out roof and entry pillars, thus preventing accidents.

Banning No. 1.—Is in good condition. They have advanced the entries well, and put in an extra motor, which has increased the output greatly.

Darr.—Is an extensive mine, and is in fairly good condition all the way through, but will be better when they have the butt entry off No. 15 flat, driven to daylight.

West Newton Shaft.—Is advancing well in the new coal field, but gives some trouble in ditching the local swamps.

Ocean No. 5.—There is some trouble at this mine by local swamps and bad roof. Ventilation is fairly good and is by furnace, but they intend to put in a fan.

Forrest Hill.—This mine is being gotten into better condition for a larger output. Ventilation and drainage are fairly good.

Sarah.—Is a small mine, but it will only be a short time until it is an extensive one, as they are getting away from the unevenness of the coal and grades. They installed a Clark fan this year, which will increase the ventilation.

Ocean Nos. 2 and 3.—Are operated by the same ventilating power. They are in fairly good conditions and well looked after.

Painter and Cornell.—Has been improved some in ventilation, but needs a little more.

Dravo.—The ventilation and drainage are a little better; the conditions at present look as though they will be improved.

Brown Nos. 1 and 2.—There has been very little work done this year in these mines. They are driving entries to Lovedale, which will connect them. They are putting up a large fan and electric power plant.

Mines on the Belle Vernon Railroad.

Belle Bridge.—Ventilation and drainage are in good condition in this mine where the rooms are worked, but in the other opening where nothing but entries are worked, it is not very good until daylight is reached at the outcrop.

United.—Is a new opening, and there is a good opportunity for keeping the ventilation and drainage in good condition.

Lovedale.—Is working only two entries night and day, to connect with Browns No. 2.

Gospel.—The most of the year has been spent in making improvements and it is now in good condition.

Horner & Roberts.—Has not worked any this year.

Glassport.—They do not ship any coal, it is all custom coal. Ventilation and drainage are good.

Mines Near Connellsville.

Trotter.—Is well attended to and in good condition.

Leisenring No. 1.—Is in good condition. They have two compressed air locomotives inside to haul the coal, which are giving good results.

Leisenring No. 3.—Ventilation and drainage are in good condition. There is a very heavy cover over the coal, which fractures the roof in some places, but making a change in the length of the room, will overcome this.

Elm Grove.—Is in good condition as to ventilation and drainage.

Juniata.—Has a good record for ventilation and drainage.

Davidson Shaft.—Is in good condition regarding ventilation and drainage, but they are having some trouble with local swamps.

Henry Clay.—Is in good condition for mining, ventilation and drainage.

Coal Brook.—There is nothing to complain of in regard to ventilation and drainage.

Grace.—This is a convenient mine for getting a large output of coal. Ventilation and drainage are very good.

Wheeler.—This mine will soon be worked out of solid coal. They have a considerable number of room and entry pillars to extract. Ventilation and drainage are fairly good.

Morell.—This mine is entirely exhausted.

Atlas and Mahoning.—Are connected inside, and look like one mine. Conditions are fairly good.

Ferguson.—Has been driven to its boundary lines on all sides, and is now on the retreat, but has over a mile of territory to come back. Ventilation and drainage are good.

Furnace Mine.—Is working the Freeport E seam. Considerable expense has been put on improvements at this place, for the purpose of handling and cleaning coal to make coke.

Soisson Mine.—Is a small mine and does not come under the law. Ventilation and drainage are good.

Baltimore and Ohio Mine.—The working of this mine is all on the other side of the river. The conditions are good with necessary ventilation and drainage.

Mines in Somerset County.

Reed Mine.—Is a new opening, working one of the lower seams called B. There are four feet of clean coal, but there are two feet of fireclay in the middle of it. Conditions for ventilation and drainage are good.

William Mine.—Is a small mine; so far they are working one of the lower seams called C. There are four feet of clean coal without any slate, and I might add they are without any ventilation.

Rockwood.—Is a new opening on the B seam. The conditions of this mine are fairly good.

Viaduct.—Is also working the B seam with slate in the middle, and no ventilation. There are not enough of men employed to bring it under the mining law.

Rosebud.—This is the only mine at Ursina. The coal, although one of the barren measures, is six and seven feet thick, with no slate in it. Ventilation and drainage are good.

Casselman. —This mine is fairly good as to ventilation and drainage. The entries are not far enough in advance to maintain a large output.

Salisbury Branch.

Pen Mar.—This is an old mine, but it will not last much longer, as they are at the boundary line now, with not much solid coal to work. Ventilation and drainage are good.

Tub Mill Run.—At present has good ventilation and drainage. With its two openings there is very little solid coal to work.

Merchants Nos. 1, 2, and 3.—No. 1 is exhausted unless they take out the entry pillars. No. 2 has very little solid coal to work, but has good ventilation and drainage. At No. 3 there is trouble with local swamps, but they expect to be over them soon.

Chapman.—Will soon be exhausted. In my visits I found the conditions fairly good.

Fairview.—Is working the upper seam four feet thick. The Pittsburg seam being all worked from under it, causes an odd state of affairs. The falls are frequent, and blackdamp issuing from them makes it dangerous and unhealthful.

Grassy Run.—Is in good condition with natural means of ventilation. The difference of elevation is the chief cause, and also for drainage.

Hamilton.—Has both fan and furnace and is well equipped for ventilation.

Wilmoth.—Is working the big seam and also the four feet. The big seam is in good condition as to drainage and ventilation but the four feet seam needs attention.

Glen Maclaren.—Is working the big seam, and four foot seam They have furnace ventilation in big seam and have none to spare, but they have a good fan at the other seam and have more than sufficient.

Thomas.—Was in good condition with only a few persons working inside.

Shaws No. 1.—Is a very extensive mine, capable of handling a large output of coal. The ventilation needed to be increased and could be were attention given to the overcasts and stopping. No. 2 is a new opening and did not come under the law at my last visit.

Cumberland.—In this mine the ventilation has been neglected. If a trap door were opened it remained open unless the party who opened it attended to it. They are working the four foot seam without any ventilation, but I will see that they will not do so very long.

Enterprise Nos. 1 and 2.—No. 2 has not a sufficient number of men to come under the law. No. 1 has and was in fairly good condition at my last visit.

Ponfeigh.—Is not one of the best equipped mines as to ventilation; they have a poor fan and it is in a poor place to ventilate an extensive mine. The grade is steep enough to make the drainage fairly good.

Allegheny.—Is in good condition as regards ventilation and drainage. It is well attended to.

Standard Nos. 1 and 2.—Has not worked any this year, and was not visited.

Lottie Nos. 1 and 2.—No. 1 has been idle during the year. No. 2 was in good condition on my last two visits.

Stoner Mine.—Has a new opening, and was in good condition on my last visit.

Grace.—Is a small mine with two openings and has not a very large field of coal to work on, but they have more than they have ventilation for, for some time to come.

Berlin.—Two shafts are being sunk at this place which will go down about 500 feet to the B seam.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Ninth Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
H. C. Frick Coke Co.						
Leisenring No. 1,	Fayette,	O. W. Kennedy,	Scottdale,	Austin King,	Leisenring,	S. W. B. of P. R. R.
Leisenring No. 3,	Fayette,	O. W. Kennedy,	Scottdale,	—— Collins,	Leisenring,	S. W. B. of P. R. R.
Trotter,	Fayette,	O. W. Kennedy,	Scottdale,	P. J. Formay,	New Haven,	S. W. B. of P. R. R.
Adelaide,	Fayette,	O. W. Kennedy,	Scottdale,	Jas. A. Childs,	Adelaide,	P. & L. E. R. R.
Henry Clay,	Fayette,	O. W. Kennedy,	Scottdale,	Wm. C. Mullen,	Broad Ford,	B. & O. R. R.
Coal Brook,	Fayette,	O. W. Kennedy,	Scottdale,	—— Head,	Moyer,	P. R. R.
Davidson shaft,	Fayette,	O. W. Kennedy,	Scottdale,	Wm. H. Hugas,	Connellsville,	P. R. R.
W. J. Rainey.						
Paul,	Fayette,	T. J. Mitchell,	Connellsville,	J. B. Henderson,	Vanderbilt,	P. & L. E. R. R.
Fort Hill,	Fayette,	T. J. Mitchell,	Connellsville,	J. B. Henderson,	Vanderbilt,	P. & L. E. R. R.
Elm Grove,	Fayette,	T. J. Mitchell,	Connellsville,	J. B. Henderson,	Vanderbilt,	B. & O. Short Line.
Grace,	Fayette,	T. J. Mitchell,	Connellsville,			P. R. R.
Juniata Coke Co.						
Juniata,	Fayette,	M. M. Cochran,	Dawson,	Adam Nicholson,	Juniata,	B. & O. Short Line.
Lang Sand and Coal Co.						
Basil,	Fayette,	Robert Lang,	New Haven,			P. R. R.
Lake Shore Gas Coal Co.						
Dravo,	Allegheny,	C. H. Wisser,	Robbins,			P. & L. E. R. R.
James W. Ellsworth & Co.						
Forrest Hill,	Allegheny,	A. A. Augustus,	Cleveland, O.,	Jas. Henderson,	Suterville,	P. & L. E. R. R.
James Cochran Sons & Co.						
Clarissa,	Fayette,	N. A. Rist,	Dawson,			P. & L. E. R. R.
Brown & Cochran.						
Nellie,	Fayette,	J. R. Laughrey,	Dawson,	I. W. Knight,	Vanderbilt,	P. & L. E. R. R.
Pittsburg Coal Co.						
Whittset,	Fayette,	Geo. W. Schluederberg,	Pittsburg,	A. W. Osborne,	West Newton,	P. & L. E. R. R.
Banning Nos. 1 and 2,	Fayette,	Geo. W. Schluederberg,	Pittsburg,	A. W. Osborne,	West Newton,	P. & L. E. R. R.
Wick Haven,	Fayette,	Geo. W. Schluederberg,	Pittsburg,	A. W. Osborne,	West Newton,	P. & L. E. R. R.
Darr,	Westmoreland,	Geo. W. Schluederberg,	Pittsburg,	A. W. Osborne,	West Newton,	P. & L. E. R. R.
West Newton shaft,	Westmoreland,	Geo. W. Schluederberg,	Pittsburg,	A. W. Osborne,	West Newton,	P. & L. E. R. R.
Ocean No. 2,	Allegheny,	Geo. W. Schluederberg,	Pittsburg,	A. W. Osborne,	West Newton,	P. & L. E. R. R.
Ocean Nos. 3 and 4,	Allegheny,	Geo. W. Schluederberg,	Pittsburg,	A. W. Osborne,	West Newton,	P. & L. E. R. R.
Ocean No. 5,	Allegheny,	Geo. W. Schluederberg,	Pittsburg,	A. W. Osborne,	West Newton,	P. & L. E. R. R.
Sarah,	Allegheny,	Geo. W. Schluederberg,	Pittsburg,	A. W. Osborne,	West Newton,	P. & L. E. R. R.
Painter and Cornell,	Allegheny,	Geo. W. Schluederberg,	Pittsburg,	A. W. Osborne,	West Newton,	P. & L. E. R. R.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
M'ngahala River C. C. & C. Co.						
Browns Nos 1 and 2,	Allegheny,	O. A. Blackburn,	Pittsburg,	Geo. E. Peterson,	Boston,	Monongahela River.
Belle Bridge,	Allegheny,	O. A. Blackburn,	Pittsburg,	Thomas Jones,	Belle Bridge,	Monongahela River.
Lovedale,	Allegheny,	O. A. Blackburn,	Pittsburg,	Thomas Jones,	Belle Bridge,	Monongahela River.
Horner & Roberts,	Allegheny,	O. A. Blackburn,	Pittsburg,	Thomas Jones,	Belle Ridge,	Monongahela River.
Gospel,	Allegheny,	O. A. Blackburn,	Pittsburg,	Ezra Connway,	Elizabeth,	Monongahela River.
United Coal Co.						
United,	Allegheny,	H. D. O'Neil,	McKeesport,	Jas. D. O'Neil,	Elizabeth,	Monongahela River.
Glassport Coal Co.						
Glassport,	Allegheny,	W. A. Wilson,	Glassport,	W. A. Wilson,	Glassport,	Custom coal.
Merchants Coal Co.						
Merchants No. 1,	Somerset,	R. S. Garrett,	Elk Lick,			B. & O. R. R.
Merchants No. 2,	Somerset,	R. S. Garrett,	Elk Lick,			B. & O. R. R.
Merchants No. 3,	Somerset,	R. S. Garrett,	Elk Lick,			B. & O. R. R.
W. K. Niver.						
Pen Mar,	Somerset,	John Lochrie,	Winber,	John F. Noble,	Elk Lick,	B. & O. R. R.
Benjamin Thomas.						
Thomas,	Somerset,	Benjamin Thomas,	Meyersdale,			B. & O. R. R.
Ehlen Brothers.						
Tub Mill Run,	Somerset,	Stewart Smith,	Elk Lick,			B. & O. R. R.
Chapman Coal Mining Co.						
Chapman,	Somerset,	W. J. Chapman,	Baltimore,	R. A. Winter,	Coal Run,	B. & O. R. R.
Grassy Run Coal Co.						
Grassy Run,	Somerset,	John Meager,	Elk Lick,			B. & O. R. R.
Duncombe & Hocking.						
Hamilton,	Somerset,	John Hocking,	Meyersdale,	A. D. Faulkner,	Boynton,	B. & O. R. R.
Cumberl'd & Elk Lick Coal Co.						
Shaws No. 1,	Somerset,	A. C. Rawlins,	Meyersdale,		Boynton,	B. & O. R. R.
Shaws No. 2,	Somerset,	A. C. Rawlins,	Meyersdale,		Boynton,	B. & O. R. R.
The Continental Coal Co.						
Glen McLaren,	Somerset,	W. W. Shawhan,	Meyersdale,		Boynton,	B. & O. R. R

Cumberland & Summit Coal Co.						
Cumberland.	Somerset,	Fred. Rowle,	Meyersdale,			B. & O. R. R.
Casselman Coal Co.						
Casselman,	Somerset,	F. B. Black,	Meyersdale,			B. & O. R. R.
Merrill & Walker.						
Enterprise,	Somerset,	W. A. Merrell,	Garrett,			B. & O. R. R.
Rockwood Coal Mining Co.						
Rockwood,	Somerset,	J. M. Wolfenberger,	Rockwood,			B. & O. R. R.
Stoner Coal Co.						
Berlin,	Somerset,	John O. Stoner,	Berlin,			B. & O. R. R.
H. J. Wilmoth.						
Wilmoth,	Somerset,	H. J. Wilmoth,	Meyersdale,			B. & O. R. R.
Fairview Coal Co.						
Fairview,	Somerset,	Thos. Rees,	Meyersdale,			B. & O. R. R.
Pine Hill Coal Co.						
Lottie Nos. 1 and 2,	Somerset,	I. Good,	Pine Hill,			B. & O. R. R.
W. D. Althouse & Co.						
Allegheny,	Somerset,	F. R. Lyon,	Garrett,			B. & O. R. R.
Ponfeigh,	Somerset,					B. & O. R. R.
Ursina Coal Co.						
Rosebud,	Somerset,	J. F. Huff,	Ursina,			B. & O. R. R.
Smokeless Coal Co.						
Grace,	Somerset,	Joseph Parker,	Berlin,			B. & O. R. R.
Spiah & Read.						
Read,	Somerset,	Thomas Marshall,	Casselman,	Thos. Marshall,	Casselman,	
Southern Coal Co.						
Williams,	Somerset,	F. H. Darby,	Somerset,	Thos. Marshall,	Casselman,	
Savage Fire Brick Co.						
Gooseberry,	Bedford,	Uriah Smith,	Hoblitzell,			B. & O. R. R.
Cambria Iron and Steel Co.						
Morrell,	Fayette,	John N. Patt,	Dunbar,	J. Stoker,	Dunbar,	B. & O. & S. W. B. of P. R. R.
Wheeler,	Fayette,	John N. Patt,	Dunbar,	J. Stoker,	Dunbar,	B. & O. & S. W. B. of P. R. R.
Atlas—Mahoning,	Fayette,	John N. Patt,	Dunbar,	J. Stoker,	Dunbar,	S. W. B. of P. R. R.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Washington Coal and Coke Co.						
Washington No. 1,	Fayette,	J. S. Newmeyer,	Dawson,	Geo. Sentemeyer,	Washington Run.	P., McK. & B. & O.
Washington No. 2,	Fayette,	J. S. Newmeyer,	Dawson,	Geo. Sentemeyer,	Washington Run.	P., McK. & B. & O.
Perry,	Fayette,	J. S. Newmeyer,	Dawson,	Geo. Sentemeyer,	Washington Run.	P., McK. & B. & O.
J. R. Laughrey & Son.						
Victoria,	Fayette,	J. S. Laughrey,	Washington Run,	J. S. Laughrey,	Washington Run.	P., McK. & Y.
Marietta & Stillwagon.						
B. & O.,	Fayette,	Clair Stillwagon,	Connellsville,	Clair Stillwagon,	Connellsville,	B. & O. R. R.
Dunbar Furnace Co.						
Ferguson,	Fayette,	S. G. Valentine,	Dunbar,	John W. Greaves,	Dunbar,	S. W. B. of P. R. R. & B. & O.
Furnace,	Fayette,	S. G. Valentine,	Dunbar,	John W. Greaves,	Dunbar,	S. W. B. of P. R. R. & B. & O.
Cumb'd & Elk Lick Coal Co.						
Shaws Nos. 1 and 2,	Somerset,	A. C. Rawlins,	Meyersdale,	A. C. Rawlins,	Meyersdale,	Baltimore & Ohio.
Viaduct Coal Co.						
Darlington,	Somerset,	E. H. Werner,	Rockwood,	E. H. Werner,	Rockwood,	Baltimore & Ohio.
Ehlen Brothers.						
Tub Mill Run,	Somerset,	Stewart Smith,	Elk Lick,	Stewart Smith,	Elk Lick,	Baltimore & Ohio.

TABLE II—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Ninth Bituminous District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
H. C. Frick Coke Co.														
Leisenring No. 1,	Fayette,	12,835	6,460	3,102	376,206	235,873	500	289	520	3	6	....	2,850	63
Leisenring No. 3,	Fayette,	....	11,153	2,319	381,782	245,540	504	305	485	1	1	....	2,600	67
Trotter,	Fayette,	....	7,300	3,200	339,366	219,244	464	277	422	1	1	....	300	50
Adelaide,	Fayette,	....	4,242	2,749	292,172	190,121	375	281	337	1	2	....	150	34
Henry Clay,	Fayette,	7,897	3,700	2,903	105,542	60,695	120	290	123	......	......	756	....	13
Coal Brook,	Fayette,	3,737	1,072	1,026	102,441	64,404	120	300	124	......	......	....	....	15
Davidson shaft,	Fayette,	94,411	4,828	1,590	318,903	142,049	333	301	341	2	......	....	100	30
Total,	....	118,880	38,755	16,889	1,916,412	1,157,926	2,416	2,043	2,352	8	10	756	6,000	272
W. J. Rainey.														
Paul,	Fayette,	....	4,974	1,658	297,766	218,351	489	303	431	1	......	....	1,000	40
Elm Grove,	Fayette,	....	3,490	864	148,917	108,422	218	303	200	2	......	800	500	24
Fort Hill,	Fayette,	....	4,112	1,728	254,242	186,302	372	302	364	1	......	75	200	31
Grace,	Fayette,	....	807	1,249	114,275	95,000	407	287	325	1	......	800	....	34
Total,	....	....	13,383	5,499	815,200	608,075	1,486	1,195	1,320	5	......	1,675	1,700	129
Cambria Iron and Steel Co.														
Morrell,	Fayette,	....	987	577	41,016	30,514	400	311	64	......	......	28	250	9
Wheeler,	Fayette,	....	603	607	46,461	34,237	103	311	63	......	1	266	90	10
Mahoning,	Fayette,	....	7,171	1,032	77,736	53,538	130	227	152	......	......	10	390	18
Atlas,	Fayette,	....	4,663	496	230,781	178,045	302	291	335	2	......	21	1,055	48
Total,	....	....	13,424	2,712	395,994	296,334	935	1,140	614	2	1	325	1,785	85

TABLE II— Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Washington Coal and Coke Co.														
Washington No. 1,	Fayette,	367,231	7,808	....	375,039	192,757	320	305	609	2	......	4,320	6,000	55
Washington No. 2,	Fayette,	333,855	7,000	5,097	345,952	81,319	135	299	393	1	......	3,000	5,200	28
Perry,	Fayette,	100,171	2,180	1,411	103,762	....	....	214	126	......	1	900	750	10
Total,		801,257	16 988	6,508	824,753	274,076	455	818	1,128	3	1	8,220	11,950	93
J. R. Laughrey & Son.														
Victoria,	Fayette,	150,000	800	1,000	151,800	....	....	302	93	......	1	600	....	10
Juniata Coke Co.														
Juniata,	Fayette,	....	2,808	958	199,331	145,277	250	310	245	1	1	2,000	400	27
Marietta & Stillwagon.														
B. & O.,	Fayette,	60,000	730	....	60,730	....	....	365	47	......	1	....	....	4
Laing Sand and Coal Co.														
Basil,	Fayette,	5,665	380	4,010	10,055	....	....	308	10	......	......	....	....	1
Dunbar Furnace Co.														
Ferguson,	Fayette,	68,339	6,304	3,010	77,653	44,531	220	305	127	......	1	....	....	26
Furnace,	Fayette,	22,187	....	174	22,361	237	....	307	21	......	......	130	100	10
Total,		90,526	6,304	3,184	100,014	44,768	220	612	148	......	1	130	100	36
James Cochran Sons & Co.														
Clarissa,	Fayette,	94,599	....	4,722	99,321	65,536	108	301	95	......	......	....	....	12
Brown & Cochran.														
Nellie,	Fayette,	....	2,500	....	314,500	210,000	329	303	302	1	1	....	....	40

Mon. River Con. C. & C. Co.													
Browns No. 2,	Allegheny,	77,430	1,590	680	79,700	....	....	93	29	3	....	200	....	12
Belle Bridge,	Allegheny,	48,166	157	94	48,417	....	....	75	152	1	....	200	....	9
Lovedale,	Allegheny,	3,355	97	6	3,458	....	....	23	38	....	1	20	....	4
Gospel,	Allegheny,	51,628	68	516	52,212	....	....	89	124	....	1	200	....	11
Total,	....	180,579	1,912	1,296	183,787	....	....	280	343	4	2	620	....	36
United Coal Co.													
United,	Allegheny,	47,766	415	189	48,370	....	....	100	165	....	....	50	....	6
Glassport Coal Co.													
Glassport,	Allegheny,	8,713	....	....	8,713	....	....	311	23	....	....	14	....	2
James W. Ellsworth & Co.													
Forrest Hill,	Allegheny,	241,319	4,262	....	245,581	....	....	221	255	....	2	1,363	....	19
Lake Shore Gas Coal Co.													
Dravo,	Allegheny,	114,994	175	....	115,169	....	....	244	145	....	....	800	....	9
Pittsburg Coal Co.													
Whittset,	Fayette,	126,538	2,411	207	129,156	....	....	180	172	....	....	600	1,000	9
Banning No. 2,	Fayette,	10,457	....	....	10,475	....	....	43	49	....	1	20	200	4
Banning No. 1,	Fayette,	274,246	11,248	....	285,494	....	....	213	322	1	1	1,200	500	21
Wick Haven,	Fayette,	174,297	7,748	812	182,857	....	....	182	207	....	3	1,005	500	22
Darr,	Westmoreland,	390,577	8,875	29	399,481	....	....	221	348	5	....	1,800	300	24
West Newton shaft,	Westmoreland,	181,960	4,576	14	186,550	....	....	230	210	....	2	800	1,800	15
Ocean No. 5,	Allegheny,	208,092	335	53	208,480	....	....	246	252	1	....	500	50	19
Ocean No. 2,	Allegheny,	344,098	99	446	344,643	....	....	250	392	2	....	1,000	....	23
Sarah,	Allegheny,	96,678	92	80	96,850	....	....	252	131	1	2	150	200	6
Ocean Nos. 3 and 4,	Allegheny,	67,674	....	469	68,143	....	....	124	144	....	....	325	....	6
Painter & Cornell,	Allegheny,	156,277	1,532	54	157,863	....	....	220	145	1	....	350	....	13
Total,	....	2,030,912	36,916	2,164	2,069,992	....	....	2,161	2,372	11	10	7,745	4,550	162
Merchants Coal Co.													
Merchants No. 1,	Somerset,	51,293	364	....	51,657	....	....	170	60	....	....	400	....	4
Merchants No. 2,	Somerset,	119,515	1,200	....	120,715	....	....	259	111	1	....	1,050	....	10
Merchants No. 3,	Somerset,	37,257	....	....	37,257	....	....	246	69	....	....	533	....	6
Total,	....	208,065	1,564	....	209,629	....	....	675	240	1	....	1,983	....	20
W. K. Niver & Co.													
Pen Mar,	Somerset,	158,000	1,460	280	159,740	....	....	200	200	1	2	1,625	25	13
Ehlen Brothers.													
Tub Mill Run,	Somerset,	33,928	....	1,172	35,100	....	....	197	72	....	1	500	....	6
Chapman Coal Co.													
Chapman,	Somerset,	89,790	....	....	89,790	....	....	285	93	....	2	290	....	10

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Fair View Coal Co.														
Fair View,	Somerset,	18,750	......	......	18,750	......	......	220	24	......	......	70	......	3
Grassy Run Coal Co.														
Grassy Run,	Somerset,	60,565	......	......	60,565	......	......	233	79	......	......	550	......	7
G. W. Duncombe.														
Hamilton,	Somerset,	65,324	......	......	65,324	......	......	169	100	......	......	1,400	......	8
Cumb'd and Elk Lick Coal Co.														
Shaws No. 1,	Somerset,	268,921	800	2,000	271,721	13,549	75	258	296	......	......	3,936	......	16
Shaws No. 2,	Somerset,	27,708	......	......	27,708	......	......	156	88	......	......	300	......	6
Total,	......	296,629	800	2,000	299,429	13,549	75	414	384	......	......	4,236	......	22
H. J. Willmoth.														
Willmoth,	Somerset,	28,605	......	97	28,702	......	......	192	64	......	......	402	......	4
Benjamin Thomas.														
Thomas,	Somerset,	12,294	......	10	12,304	......	......	270	14	......	......	100	......	2
The Continental Coal Co.														
Glen McLaren,	Somerset,	114,000	1,460	200	115,660	......	......	216	195	......	1	1,000	......	12
Cumberland and Summit Coal Co.														
Cumberland,	Somerset,	130,260	......	1,533	131,795	......	10	278	216	......	1	1,700	200	10
Casselman Coal Co.														
Casselman,	Somerset,	62,602	1,325	550	64,477	......	......	245	121	1	......	575	150	12

W. A. Merrill & Co.														
Enterprise No. 1,	Somerset,	41,319		200	41,519			228	74	2	1	1,000		10
W. D. Althouse & Co.														
Allegheny,	Somerset,	39,814	968	425	41,207			180	86		2	510	50	9
Ponfeigh,	Somerset,	31,799	230	116	32,145			187	54			340		5
Total,		71,613	1,198	541	73,352			367	140		2	850	50	14
Pine Hill Coal Co.														
Lottie No. 1,	Somerset,	69,713	480	300	70,493			191	128			500		12
Smokeless Coal Co.														
Grace,	Somerset,	29,900	400		30,300			168	40			140		5
Stoner Coal Co.														
Berlin,	Somerset,	15,844			15,844			144	25			74		2
Spiah & Read.														
Read,	Somerset,	4,563			4,563			109	14	1		48	2,800	2
Southern Coal Co.														
Williams,	Somerset,	16,000		480	16,480			206	23					2
Ursina Coal Mining Co.														
Rosebud,	Somerset,	22,446		440	22,886			191	70			49	176	6
Rockwood Coal Mining Co.														
Rockwood,	Somerset,	6,656			6,656			200	13			75	50	1
Viaduct Coal Co.														
Darlington,	Somerset,	10,920			10,920			210	8			40		1
Savage Fire Brick and Coal Co.														
Gooseberry,	Bedford,	100		360	460			180	7			26		1
Grand total,		5,512,179	148,449	57,294	9,144,543	2,815,541	6,284	*222	12,001	41	42	41,531	23,936	1,128

*Average.

TABLE II—Continued.

Names of Operators.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
H. C. Frick Coke Co.,	Fayette,	10	466	34	3,460	3,926	10	4		31	4,075	10	6,941	2,206	5	7
W. J. Rainey,	Fayette,	4	60	23	1,540	1,960				12	555	11	6,340	5,560	1	3
Cambria Iron and Steel Co.,	Fayette,	6	60	17	240	1,620	1			14	715	2	1,300	800		
Washington Coal and Coke Co.,	Fayette,			13	709	1,200	1	4	1	14	1,826	5	1,700	2,100	2	3
J. R. Laughrey & Son,	Fayette,			2	60	120				1	50	1	150	100		1
Juniata Coke Co.,	Fayette,			5	409	409	1			3	437	2	560	440		
Marietta & Stillwagon,	Fayette,			3	120	120				1	85	2	360	720		
Laing Sand and Coal Co.,	Fayette,			1	30	30						1	102	90		
Dunbar Furnace Co.,	Fayette,	6	360							1	100	4	675	375		1
James Cochran Sons & Co.,	Fayette,															
Brown & Cochran,	Fayette,			3	100	100	1					3	400	250		
Mon. River Con. Coal & Coke Co.,	Allegheny,	2	63	8	278	672	2			6	420	2	450	175	1	
United Coal Co.,	Allegheny,														1	
Glassport Coal Co.,	Allegheny,															
James W. Ellsworth & Co.,	Allegheny,			6	680	680			2	6	780	1	300	250	2	
Lake Shore Gas Coal Co.,	Allegheny,			1	150	150			1	1	50	1	260	200	1	
Pittsburg Coal Co.,	Fayette, Westmoreland & Allegheny.	8	125	29	2,788	2,913			8	23	1,410	18	4,835	4,290	4	6
Merchants Coal Co.,	Somerset,			4	200	400			2	4	870	1	100	42	4	
W. K. Niver & Co.,	Somerset,			2	160	160				3	87	3	175	150		1
Ehlen Brothers,	Somerset,															
Chapman Coal Co.,	Somerset,															
Fair View Coal Co.,	Somerset,															
Grassy Run Coal Co.,	Somerset,															
G. W. Dunscombe,	Somerset,			1	10	10										
Cumb'd & Elk Lick Coal Co.,	Somerset,			2	220	220			1	2	180	1	100	100	1	
H. J. Willmoth,	Somerset,															
Benjamin Thomas,	Somerset,															
The Continental Coal Co.,	Somerset,	2	100							3	185	2	350	150		1
Cumberland & Summit Coal Co.,	Somerset,															

Casselman Coal Co.,	Somerset,	......	......	2	100	200	......	......	......	2	85	1	500	400	......	......
W. A. Merrill & Co.,	Somerset,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
W. D. Althouse & Co.,	Somerset,	......	......	3	210	210	......	......	......	3	123	1	300	160	......	1
Pine Hill Coal Co.,	Somerset,	......	......	1	45	45	......	......	......	......	......	1	60	60	......	......
Smokeless Coal Co.,	Somerset,	......	......	1	30	30	......	......	......	......	......	1	102	50	......	......
Spiah & Reed,	Somerset,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Southern Coal Co.,	Somerset,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Ursina Coal Mining Co.,	Somerset,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Rockwood Coal Mining Co.,	Somerset,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Viaduct Coal Co.,	Somerset.	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Savage Fire Brick and Coal Co.,	Bedford,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Grand total,	......	38	1,234	161	11,530	15,175	16	8	15	130	12,033	74	26,060	18,668	22	20

TABLE III—Number of each class of employes at each colliery in the Ninth Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Ooutside.								Grand total inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
H. C. Frick Coke Co.																		
Leisenring No. 1,	Fayette,	1	4	220	29	18	6	12	290	2	7	8	......	209	4	......	230	520
Leisenring No. 2,	Fayette,	1	5	226	20	24	5	8	289	1	8	8	1	175	3	......	196	485
Trotter,	Fayette,	1	4	182	20	20	5	8	240	1	5	7	1	165	3	......	182	422
Adelaide,	Fayette,	1	3	155	25	16	2	......	202	2	5	5	......	121	2	......	135	337
Henry Clay,	Fayette,	1	1	53	2	7	......	2	66	1	1	4	......	49	2	......	57	123
Coal Brook,	Fayette,	1	1	55	1	6	5	1	70	1	1	1	......	50	1	......	54	124
Davidson shaft,	Fayette,	1	2	180	9	17	1	10	220	1	4	7	......	106	3	......	121	341
Total and average,		7	20	1,071	106	108	24	41	1,377	9	31	40	2	875	18	......	975	2,352
W. J. Rainey.																		
Paul,	Fayette,	1	3	190	3	24	......	6	227	2	7	7	......	177	11	......	204	431
Elm Grove,	Fayette,	1	1	80	4	10	3	5	104	1	3	3	......	84	5	......	96	200
Fort Hill,	Fayette,	1	1	162	3	18	......	2	187	1	2	6	......	163	5	......	177	364
Grace,	Fayette,	1	......	118	3	15	3	10	150	1	4	5	......	157	8	......	175	325
Total and average,		4	5	550	13	67	6	23	668	5	16	21	......	581	29	......	652	1,320
Cambria Iron and Steel Co.																		
Morrell,	Fayette,	1	1	33	2	2	......	2	41	1	2	2	......	17	1	......	23	64
Wheeler,	Fayette,	1	......	31	1	2	......	3	38	1	1	2	......	20	1	......	25	63
Mahoning,	Fayette,	1	1	59	8	7	1	22	99	1	4	4	......	42	2	......	53	152
Atlas,	Fayette,	1	2	140	9	26	3	28	209	1	6	3	......	113	3	......	126	335
Total and average,		4	4	263	20	37	4	55	387	4	13	11	......	192	7	......	227	614

Washington Coal and Coke Co.																		
Washington No. 1,	Fayette,	2	3	317	10	35	1	46	414	6	5	5	1	172	6	......	195	609
Washington No. 2,	Fayette,	1	3	231	7	16	......	39	297	4	6	5	1	80	......	......	96	393
Perry,	Fayette,	1	1	79	6	8	2	14	111	1	2	4	1	......	2	5	15	126
Total and average,		4	7	627	23	59	3	99	822	11	13	14	3	252	8	5	306	1,128
J. R. Laughrey & Son.																		
Victoria,	Fayette,	1	......	70	......	5	......	......	76	1	2	3	......	......	3	8	17	93
Juniata Coal Co.																		
Juniata,	Fayette,	1	1	115	......	14	1	15	147	1	3	3	......	89	2	......	98	245
Marietta & Stillwagon.																		
B. & O.,	Fayette,	1	......	30	2	2	......	4	39	1	......	2	......	......	1	4	8	47
Laing Coal and Sand Co.																		
Basil,	Fayette,	1	......	7	......	......	......	......	8	......	......	1	......	......	1	......	2	10
Dunbar Furnace Co.																		
Ferguson,	Fayette,	1	1	63	......	7	......	10	82	1	4	5	......	34	1	......	45	127
Furnace,	Fayette,	1	......	9	......	3	......	4	17	......	2	......	1	......	1	......	4	21
Total and average,		2	1	72	......	10	......	14	99	1	6	5	1	34	2	......	49	148
James Cochran Sons & Co.																		
Clarissa,	Fayette,	1	......	50	2	7	......	......	60	1	1	......	......	31	2	......	35	95
Brown & Cochran.																		
Nellie,	Fayette,	1	1	175	5	15	5	......	202	1	3	4	......	90	2	......	100	302
Mon. River Con. Coal & Coke Co.																		
Browns No. 2,	Allegheny,	1	......	21	......	3	1	......	26	......	1	1	......	......	1	......	3	29
Belle Bridge,	Allegheny,	1	......	116	......	9	3	7	136	......	1	1	......	......	2	12	16	152
Lovedale,	Allegheny,	1	......	13	......	2	......	3	19	......	2	2	......	......	1	14	19	38
Gospel,	Allegheny,	1	1	90	......	8	3	4	107	......	1	5	......	......	2	9	17	124
Total and average,		4	1	240	......	22	7	14	288	......	5	9	......	......	6	35	55	243
United Coal Co.																		
United,	Allegheny,	1	......	102	10	8	2	7	130	......	2	1	1	......	2	29	35	165
Glassport Coal Co.																		
Glassport,	Allegheny,	1	......	18	......	2	......	......	21	......	......	......	......	......	1	1	2	23
James W. Ellsworth & Co.																		
Forrest Hill,	Allegheny,	1	2	178	4	13	1	26	225	1	3	3	......	......	2	21	30	255
Lake Shore Gas Coal Co.																		
Dravo,	Allegheny,	1	......	119	2	8	2	......	132	1	2	1	2	......	1	6	13	145

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Ooutside.								
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	Grand total inside and outside.
Pittsburg Coal Co.																		
Whittset,	Fayette,	1	1	140	3	8	4	......	157	......	2	3	......	......	1	9	15	172
Banning No. 2,	Fayette,	1	1	35	2	4	......	......	43	......	1	......	......	......	......	5	6	49
Banning No. 1,	Fayette,	1	2	250	14	18	2	......	287	......	5	7	......	......	2	21	35	322
Wick Haven,	Fayette,	1	2	153	5	16	5	3	185	......	3	7	......	......	1	11	22	207
Darr,	Westmoreland,	1	2	259	16	20	2	4	304	1	6	9	......	......	2	26	44	348
West Newton shaft,	Westmoreland,	1	1	145	10	19	3	8	187	......	3	5	......	......	2	13	23	210
Ocean No. 5,	Allegheny,	1	1	202	7	18	1	3	233	......	3	......	......	......	......	16	19	252
Ocean No. 2,	Allegheny,	1	3	317	10	20	8	2	361	......	3	1	......	......	3	24	31	392
Sarah,	Allegheny,	1	......	106	5	6	2	1	121	......	2	......	......	......	......	8	10	131
Ocean Nos. 3 and 4,	Allegheny,	......	1	110	5	6	5	2	129	......	1	......	......	......	......	14	15	144
Painter & Cornell,	Allegheny,	1	1	108	6	11	1	1	129	......	2	2	......	......	1	11	16	145
Total and average,	....	10	15	1,825	83	146	33	24	2,136	1	31	34	......	......	12	158	236	2,372
Merchants Coal Co.																		
Merchants No. 1,	Somerset,	1	......	45	2	5	......	......	53	......	......	2	......	......	......	5	7	60
Merchants No. 2,	Somerset,	1	......	86	1	8	1	4	101	......	......	2	......	......	1	7	10	111
Merchants No. 3,	Somerset,	1	......	52	2	4	1	2	62	......	......	1	......	......	......	6	7	69
Total and average,	....	3	......	183	5	17	2	6	216	......	......	5	......	......	1	18	24	240
W. K. Niver & Co.																		
Pen Mar,	Somerset,	1	......	159	....	10	5	......	175	......	2	4	1	......	3	15	25	200
Ehlen Brothers.																		
Tub Mill Run,	Somerset,	1	......	47	5	6	2	2	63	1	1	......	......	......	1	6	9	72

Chapman Coal Co. Chapman,	Somerset,	1	......	66	2	10	3	6	88	......	......	......	......	......	1	4	5	93
Fair View Coal Co. Fair View,	Somerset,	......	1	18	....	2	......	......	21	......	......	......	......	......	1	2	3	24
Grassy Run Coal Co. Grassy Run,	Somerset,	1	......	60	2	8	3	......	74	1	1	......	......	......	1	2	5	79
G. H. Duncombe. Hamilton,	Somerset,	1	......	79	....	8	3	3	94	......	1	1	......	......	1	3	6	100
Continental & Elk Coal Co. Shaws No. 1,	Somerset,	2	......	219	8	15	3	4	251	......	4	1	......	......	3	37	45	296
Shaws No. 2,	Somerset,	1	......	70	2	6	2	3	84	......	1	......	......	......	1	2	4	88
Total and average,		3	......	289	10	21	5	7	335	......	5	1	......	......	4	39	49	384
Stoner Coal Co. Berlin,	Somerset,	1	......	20	....	2	......	......	23	1	......	......	......	......	1	......	2	25
Spiah & Read. Read,	Somerset,	1	......	10	....	1	......	1	13	......	1	......	......	......	......	......	1	14
Enterprise Coal Co. Williams,	Somerset,	1	......	16	....	2	......	......	19	......	1	......	......	......	1	2	4	23
Ursina Coal Mining Co. Rosebud,	Somerset,	1	......	42	2	3	3	2	53	1	2	1	1	......	2	10	17	70
Rockwood Coal Mining Co. Rockwood,	Somerset,	1	......	10	....	1	......	......	12	......	......	......	......	......	1	......	1	13
Viaduct Coal Co. Darlington,	Somerset,	1	......	5	....	....	......	......	6	......	......	......	......	......	2	......	2	8
H. J. Willmoth. Willmoth,	Somerset,	1	......	49	4	4	......	......	58	1	1	......	1	......	1	2	6	64
Benjamin Thomas. Thomas,	Somerset,	1	......	10	....	1	......	......	12	......	......	......	......	......	1	1	2	14
Continental Coal Co. Glen McLaren,	Somerset,	1	......	160	....	10	3	4	178	1	2	2	2	......	2	8	17	195
Cumberland and Summit Coal Co. Cumberland,	Somerset,	1	......	166	10	17	5	......	199	1	3	......	2	......	......	11	17	216
Casselman Coal Co. Casselman,	Somerset,	2	......	92	....	7	1	5	107	......	2	4	......	......	2	6	14	121

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, book-keepers and clerks.	All other employes.	Total outside.	
W. A. Merrill & Co.																		
Enterprise,	Somerset,	1	......	60	1	6	......	......	68	......	1	......	......	......	2	3	6	74
W. D. Althouse & Co.																		
Allegheny,	Somerset,	1	......	65	....	6	2	2	76	......	1	3	1	......	2	3	10	86
Ponfeigh,	Somerset,	1	......	43	....	4	3	......	51	......	1	2	......	......	......	......	3	54
Total and average,	......	2	......	108	....	10	5	2	127	......	2	5	1	......	2	3	13	140
Pine Hill Coal Co.																		
Lottie No. 1,	Somerset,	1	......	110	....	7	......	1	119	......	1	2	......	......	1	5	9	128
Smokeless Coal and Coke Co.																		
Grace,	Somerset,	1	......	30	....	3	......	......	34	1	......	1	1	3	......	......	6	40
Savage Fire Brick and Coal Co.																		
Gooseberry,	Bedford,	1	......	3	....	1	......	......	5	......	......	......	......	......	......	2	2	7
Grand total,	......	74	58	6,904	311	690	128	461	8,626	46	167	178	18	2,518	139	309	3,375	12,001

TABLE III—Continued.

Names of Operators.	County.	Number of Days Worked in Each Month.												
		January.	February	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
H. C. Frick Coke Co.,	Fayette,	24	21.50	24	25	25	23.50	25	24.50	23.50	26	26	23	292
W. J. Rainey,	Fayette,	27	24	26	25.50	24.25	23	26	27	24.50	25	23.50	23.25	299
Cambria Iron and Steel Co.,	Fayette,	27	24	26	25	24.66	23	20.50	27	22.50	26.50	26	25	285
Washington Coal and Coke Co.,	Fayette,	27	24	26	25	23.33	23	25	26	24.50	26	24.33	24	272.33
J. R. Laughrey & Son,	Fayette,	27	23	26	25	25	24	26	26	25	27	23	25	302
Juniata Coke Co.,	Fayette,	27	24	26	26	27	25	26	27	25	27	25	25	310
Marietta & Stillwagon,	Fayette,	31	28	31	30	31	30	31	31	30	31	30	31	365
Laing Coal and Sand Co.,	Fayette,	27	24	26	26	25	26	26	25	26	26	25	26	308
Dunbar Furnace Co.,	Fayette,	27	24	26	26	26	25	26	24	25	27	25	25	306
James Cochran Sons & Co.,	Fayette,	27	24	26	26	26	23	25	24	25	26	25	24	301
Brown & Cochran,	Fayette,	26	24	25	26	24	25	25	26	26	25	26	25	303
Monongahela River Cons'd Coal & Coke Co.,	Allegheny,	10.50	4	4.66	20.33	23.66	20	8	4	4	4	4.50	4	70
United Coal Co.,	Allegheny,	....	....	....	....	....	....	....	18	20	22	21	19	100
Glassport Coal Co.,	Allegheny,	27	24	26	26	27	25	25	26	25	27	26	27	311
James W. Ellsworth & Co.,	Allegheny,	24	19	12	15	14	13	17	25	17	24	19	22	221
Lake Shore Gas Coal Co.,	Allegheny,	26	15	19	16	17	19	23	24	22	20	20	23	244
Pittsburg Coal Co.,	Fayette, Westmoreland and Allegheny.	17	14	13	14.50	18.50	18.50	23	41	18.50	20	19	20.50	196.50
Merchants Coal Co.,	Somerset,	16	17.33	18	19.66	19.66	20	20	22	20.66	21.33	15.66	15.33	225
W. K. Niver & Co.,	Somerset,	17	16	24	15	17	14	18	24	20	13	11	11	200
Ehlen Brothers,	Somerset,	22	12	....	16	14	13	24	15	21	23	17	20	197
Chapman Coal Co.,	Somerset,	21	20	23	24	26	26	24	24	23	25	24	25	285
Fair View Coal Co.,	Somerset,	18	18	17	16	22	24	16	14	17	18	19	21	220
Grassy Run Coal Co.,	Somerset,	18	19	21	22	23	20	22	18	17	21	14	18	233
G. H. Duncombe,	Somerset,	13	14	13	15	....	16	16	14	11	20	16	21	169
Continental and Elk Coal Co.,	Somerset,	19.50	20.50	21	23	24	12	24	17	14.50	21	22	22.50	207
Stoner Coal Co.,	Somerset,	25	25	15	23	....	....	....	....	6	10	15	25	144
Spiah & Read,	Somerset,	....	....	....	....	....	6	16	18	20	20	14	15	109
Enterprise Coal Co.,	Somerset,	16	14	17	18	20	17	19	18	17	22	15	13	206
Ursina Coal Mining Co.,	Somerset,	....	....	....	19	20	20	22	20	23	25	22	20	191
Rockwood Coal Mining Co.,	Somerset,	....	....	11	16	20	24	20	16	17	24	26	26	200
Viaduct Coal Co.,	Somerset,	16	16	17	19	20	19	22	14	16	17	16	18	210
H. J. Wilimoth,	Somerset,	18	16	10	17	10	10	13	20	18	12	23	25	192

TABLE III—Continued.

Names of Operators.	County.	Number of Days Worked in Each Month.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Benjamin Thomas,	Somerset,	22	22	21	23	22	23	23	24	22	22	23	23	270
Continental Coal Co.,	Somerset,	18	18	18	18	18	18	18	18	18	18	18	18	216
Cumberland and Summit Coal Co.,	Somerset,	25	20	20	21	27	24	24	21	22	26	24	24	278
Casselman Coal Co.,	Somerset,	....	....	....	....	31	30	31	31	30	31	30	31	245
W. A. Merrill & Co.,	Somerset,	23	15	16	16	16	13	15	23	23	24	22	22	228
W. D. Althouse & Co.,	Somerset,	17.50	11.50	10	18	13	10.50	10.50	16	19	20.50	16	21	183.50
Pine Hill Coal Co.,	Somerset,	22	18	15	20	2	10	19	15	6	23	21	20	191
Smokeless Coal and Coke Co.,	Somerset,	18	14	16	1	....	18	14	14	14	22	17	20	168
Savage Fire Brick and Coal Co.,	Bedford,	13	11	9	1	15	17	16	22	20	19	20	17	180
Grand total,		1,376	1,194	1,206	1,349	1,353	1,367	1,457	1,530	1,423	1,567	1,474	1,502	*222

*Average.

TABLE IV—List of fatal accidents that occurred in and about the mines of the Ninth Bituminous District for the year ending December 31, 1901.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan. 14	Steve Borts,	Austrian,	Miner,	27	M.	1	....	Darr,	Westmoreland,	Instantly killed by a fall of slate.
14	Michael Carrigan,	Irish,	Laborer,	30	S.	....	....	Leisenring No. 1,	Fayette,	Fatally injured by being run over by a truck.
Feb. 4	George Jubal,	Slav,	Miner,	22	S.	....	....	Atlas,	Fayette,	Instantly killed by fall of coal and slate.
9	Mike Stullets,	Slav,	Miner,	22	S.	....	....	Fort Hill,	Fayette,	Instantly killed by a fall of roof.
March 12	Joseph Smith,	German,	Miner,	34	M.	1	3	Atlas,	Fayette,	Fatally injured by a fall of coal and slate.
14	Clarence Thompson,	American,	Driver,	19	S.	....	....	Washington No. 2	Fayette,	Instantly killed by being run over by cars.
April 23	Peter Lestru,	French,	Miner,	54	S.	....	....	Ocean No. 2,	Allegheny,	Instantly killed by fall of roof.
30	Robert Heck,	American,	Miner,	25	M.	1	1	Paul,	Fayette,	Instantly killed by fall of roof.
May 20	Joseph Bowden,	American,	Miner,	52	M.	1	1	Enterprise No. 1,	Somerset,	Instantly killed by a fall of slate.
24	Adam Subliska,	Pole,	Miner,	32	M.	1	1	Browns No. 2,	Allegheny,	Instantly killed by a fall of slate.
31	Mike Lishco,	Slav,	Miner,	19	S.	....	....	Elm Grove,	Fayette,	Instantly killed by fall of roof.
31	Frank Kesock,	Slav,	Miner,	30	M.	1	4	Elm Grove,	Fayette,	
June 6	John Srengek,	Hungarian,	Miner,	22	S.	....	....	Leisenring No. 3,	Fayette,	Instantly killed by a fall of slate and coal.
10	Martin Steker,	English,	Driver,	32	M.	1	1	Browns No. 2,	Allegheny,	Fatally injured by being run over by wagon.
19	Antonio Ferrell,	Italian,	Miner,	40	M.	1	3	Belle Bridge,	Allegheny,	Instantly killed by a fall of slate.
24	Paul Levo,	Italian,	Miner,	25	S.	....	....	Ocean No. 5,	Allegheny,	Instantly killed by a fall of slate.
24	Mike Kroteka,	Slav,	Miner,	24	S.	....	....	Trotter,	Fayette,	Instantly killed by a fall of coal.
July 5	Elmer Dagota,	Hungarian,	Miner,	26	M.	1	1	Nellie,	Fayette,	Instantly killed by fall of roof.
9	Andy Taskee,	Slav,	Miner,	49	M.	1	3	Darr,	Westmoreland,	Instantly killed by fall of coal and roof.
9	Ralph Speelman,	American,	Helper,	15	S.	....	....	Davidson shaft,	Fayette,	Instantly killed by being caught by a wagon against a rib.
22	George Carilla,	Slav,	Miner,	42	M.	1	6	Leisenring No. 1,	Fayette,	Instantly killed by a fall of roof.
26	Sander Copeland,	American,	Miner,	35	M.	1	3	Browns No. 2,	Allegheny,	Instantly killed by a fall of slate.
Aug. 14	Joseph Seddenger,	American,	Miner,	13	S.	....	....	Sarah,	Allegheny,	Instantly killed by a blown out shot.
20	Alex. Hempfield,	American,	Miner,	26	M.	1	1	Painter & Cornell	Allegheny,	Fatally injured by a fall of slate.
Sept. 5	John Bolish,	Slav,	Miner,	32	M.	1	2	Darr,	Westmoreland,	Instantly killed; while carrying a scraper on his shoulder he came in contact with an electric wire.
6	Salvadore Desmone,	Italian,	Miner,	58	M.	1	3	Davidson shaft,	Fayette,	Instantly killed by fall of roof.
10	John Murray,	Irish,	Miner,	49	M.	1	2	Enterprise No. 1,	Somerset,	Instantly killed on tipple by a runaway wagon.
16	Andrew Lozinskie,	Austrian,	Miner,	58	M.	1	4	Merchant Coal Co. No. 2.	Somerset,	Instantly killed by fall of coal.

TABLE IV—Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Oct.	1	Cassimer,	Italian,	Miner,	49	M.	1	1	Ocean No. 2,	Allegheny,	Instantly killed by fall of slate.
	2	Cole Y. Arithout,	American,	Miner,	28	M.	1	5	Read,	Somerset,	Instantly killed by fall of fire clay.
	12	Latzie Popovish,	Slav,	Miner,	38	M.	1	....	Leisenring No. 1,	Fayette,	Instantly killed by a fall of roof.
	14	Andy Ferko,	Hungarian,	Miner,	44	M.	1	1	Darr,	Westmoreland,	Almost instantly killed by fall of slate.
	21	John Eardick,	Slav,	Miner,	36	M.	1	....	Adelaide,	Fayette,	Instantly killed by fall of roof.
	21	Andy Olekza,	Slav,	Miner,	37	M.	1	1	Washington No. 1,	Fayette,	Instantly killed by a fall of roof.
	26	Steve Popovrsha,	Slav,	Miner,	18	S.	....	....	Grace,	Fayette,	Fatally injured by powder exploding while putting a cartridge in a hole.
Nov.	7	Oliver Claigg,	American,	Miner,	20	S.	....	....	Darr,	Westmoreland,	Instantly killed by a fall of slate.
	8	John Voboschok,	Slav,	Miner,	29	M.	1	1	Juniata,	Fayette,	Fatally injured by a fall of roof.
Dec.	12	Charles McCarty,	American,	Driver,	21	S.	....	....	Washington No. 1,	Fayette,	Fatally injured by cars against the rib.
	17	Robert Walker,	English,	Miner,	33	S.	....	....	Casselman,	Somerset,	Fatally injured by a fall of slate.
	18	Wm. M. Brown,	American,	Miner,	54	S.	....	....	Pen Mar,	Somerset,	Instantly killed by a fall of slate.
	26	Ross Trunce,	Italian,	Miner,	21	M.	1	2	Banning No. 1,	Fayette,	Instantly killed by a fall of coal and slate.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Ninth Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	5	Albert Tiber,	German,	Miner,	38	M.	Trotter,	Fayette,	Knee cap dislocated by a wagon.
	15	Ed. Delaney,	Irish,	Miner,	20	S.	Glen Maclaren,	Somerset,	Ankle dislocated by fall of slate.
	19	William Shults,	Slav,	Miner,	18	S.	Leisenring No. 1,	Fayette,	Leg broken by a fall of coal.
	23	Charles Westingburg,	German,	Miner,	52	M.	Leisenring No. 1,	Fayette,	Body bruised by a fall of slate.
	25	Joseph Shaw,	American,	Miner,	38	M.	Ocean No. 2,	Allegheny,	Leg broken by a fall of slate.
	30	Adam Nodrosky,	Russian,	Miner,	39	M.	Banning No. 2,	Fayette,	Arm broken by fall of slate.
Feb.	11	Romanski Valance,	Slav,	Miner,	21	S.	Perry,	Fayette,	Leg broken by a fall of slate.
March	18	Steve Smith,	Hungarian,	Miner,	30	S.	Wick Haven,	Fayette,	Arm broken by a fall of slate.
	24	Mike Bolig,	Slav,	Laborer,	24	S.	Victoria,	Fayette,	Injured internally by a runaway wagon.
	24	John Leggart,	Slav,	Miner,	32	M.	Leisenring No. 1,	Fayette,	Leg broken by fall of roof.
April	30	Perry M. Wahel,	American,	Miner,	42	M.	Tub Mill Run,	Somerset,	Leg broken by a fall of bone coal.
May	7	Henry Rojohn,	American,	Driver,	24	M.	Browns No. 2,	Allegheny,	Leg broken by cars.
	15	Edward Sandine,	American,	Miner,	36	M.	Forrest Hill,	Allegheny,	Leg broken by a fall of slate.
	18	William Cameron,	English,	Miner,	38	M.	Adelaide,	Fayette,	Severely injured by a fall of roof.
	18	John Bell,	English,	Miner,	36	M.	Adelaide,	Fayette,	Bruised by a fall of roof.
	22	Stanley Malinski,	Pole,	Miner,	50	M.	Sarah,	Allegheny,	Leg broken by a fall of slate.
	26	John Anvarn,	Italian,	Miner,	30	S.	Juniata,	Fayette,	Leg broken by wagons, necessitating amputation.
	26	William Chushue,	American,	Driver,	17	S.	Cumberland,	Somerset,	Back broken by a fall of slate.
June	11	James Walker,	American,	Trapper,	14	S.	Chapman,	Somerset,	Arm broken by falling from a car.
	12	C. P. Herch,	American,	Miner,	45	M.	Chapman,	Somerset,	Injured by a fall of slate.
	12	Benjamin Hickman,	English,	Miner,	58	M.	W. Newton shaft,	Westmoreland,	Injured by a fall of slate and coal.
	13	Charles McIntyre,	American,	Greaser,	15	S.	Leisenring No. 1,	Fayette,	Injured by falling between wagons.
	15	Steve Krankota,	Austrian,	Miner,	38	M.	Sarah,	Allegheny,	Leg broken by a fall of slate.
	15	Marcus Martin,	American,	Miner,	74	M.	Gospel,	Allegheny,	Leg cut and otherwise injured by a wagon.
	20	John Liko,	Hungarian,	Miner,	35	M.	Wick Haven,	Fayette,	Leg broken by a fall of slate.
July	16	Metro Behon,	Slav,	Miner,	48	M.	Merchants No. 3,	Somerset,	Injured by a fall of slate.
Aug.	1	John Jupy,	Slav,	Miner,	23	S.	Forrest Hill,	Allegheny,	Leg broken by a fall of slate.
	6	Martin Bidoos,	Slav,	Miner,	35	M.	Leisenring No. 1,	Fayette,	Leg broken by a wagon.
	20	George Girgert,	Slav,	Driver,	23	S.	Banning No. 1,	Fayette,	Hip dislocated by a wagon.
	20	Nick Autsokawich,	Pole,	Miner,	30	M.	Pen Mar,	Somerset,	Leg broken by a fall of coal.
	26	John Pearce,	American,	Driver,	27	M.	Allegheny,	Somerset,	Leg and ribs broken by a fall of slate.
	26	Thomas Mitchell,	American,	Miner,	18	S.	Allegheny,	Somerset,	Leg broken by a fall of slate.

TABLE V——Continued.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Oct.	30	George Danco,	Slav,	Driver,	22	M.	Leisenring No. 1,	Fayette,	Leg broken by cars.
	3	Wesly King,	American,	Laborer,	45	M.	B. & O.,	Fayette,	Hand torn off and collar bone broken by haulage rope.
Nov.	1	Andrew Sarner,	American,	Miner,	36	M.	Enterprise No. 1,	Somerset,	Collar bone broken by a fall of coal.
	1	John Butcher,	American,	Miner,	37	M.	Lonedale,	Allegheny,	Leg broken by a fall of slate.
	4	Joseph Korbiski,	Pole,	Miner,	30	M.	Wick Haven,	Fayette,	Leg broken by a fall of slate.
	12	George Misdus,	Slav,	Miner,	37	M.	Ferguson,	Fayette,	Foot broken by a fall of coal.
	16	Samuel Yex,	German,	Miner,	35	M.	W. Newton shaft,	Westmoreland,	Back injured by a fall of slate.
	23	John Ocal,	Slav,	Miner,	27	M.	Nellie,	Fayette,	Leg broken by a fall of roof.
Dec.	14	Sandy Matrusick,	Pole,	Miner,	48	M.	Wheeler,	Fayette,	Leg broken by a fall of coal.
	17	Mike Colesser,	Hungarian,	Cager,	22	S.	Leisenring No. 3,	Fayette,	Arm broken by a wagon.

Tenth Bituminous District.

CAMBRIA, BLAIR, HUNTINGDON AND BEDFORD COUNTIES.

Altoona, Pa., February 25, 1902.

Hon. Jas. W. Latta, Secretary of Internal Affairs, Harrisburg, Pa.:

Sir: I have the honor of presenting herewith my first annual report for the Tenth Bituminous District, for the year 1901.

The report contains statistical tables and matter relating to mines and mine accidents, with a brief report of the condition of each working as regards ventilation, drainage and improvements; also a table on ventilation, and machines used in mining, and approximate quantity of coal mined by machines.

Eight persons lost their lives in the mines of this district during the year, and twenty-one were injured. There were 5,022,345 tons of coal produced during the year; one fatal accident to 627,793 tons, and 239,159 tons for each non-fatal accident. Six widows and seven orphans were left without support. Three of the fatal accidents occurred under peculiar circumstances. One was from a blast which had been charged with dynamite and black powder. The powder exploded and accomplished the work expected, while the dynamite exploded the following morning, killing John Lowrie. The other fatality occurred with an electric machine; the deceased was setting the jack and the machine became charged with electricity and in an instant he expired.

The third lost his life by the cage descending upon him through the carelessness of some one unknown.

The other five fatal accidents were caused by gross negligence and wilful disobedience of the general and special rules in not spragging coal while undermining it, and propping the roof.

Respectfully submitted,
JOSEPH WILLIAMS,
Inspector.

Statistical Table.

Number of mines in district,	107
Idle during the year,	3
Abandoned during the year,	2
New mines opened during the year,	2

Number of tons of coal produced during the year,..	5,022,345
Number of tons of coke manufactured, ...	423,642
Number of coke ovens, ...	1,344
Number of persons employed inside, ...	8,098
Number of persons employed outside, ...	1,079
Total number of persons employed, ...	9,177
Number of fatal accidents, ...	8
Number of non-fatal accidents, ...	21
Tons of coal produced per employe, ...	547,276
Number of persons employed per fatal accident, ...	1,147
Number of persons employed per non-fatal accident,	437
Number of kegs of powder used, ...	32,670
Number of pounds of dynamite used, ...	22,459
Number of horses and mules, ...	842
Number of cylinderical boilers, ...	60
Number of tubular boilers, ...	85
Total horse power, ...	9,570
Locomotives, steam, ...	5
Locomotives, air, ...	2
Locomotives, electric, ...	32
Engines of all classes, ...	79
Total horse power, ...	5,810
Number of pumps, ...	44
Capacity in gallons per minute, ...	13,280
Number of gallons lifted per minute, ...	6,937
Number of dynamos, ...	18
Number of air compressors, ...	26
Number of electric mining machines, ...	54
Number of compressed air mining machines, ...	134
Number of tons mined by electricity, ...	1,133,429
Number of tons mined by compressed air, ...	1,265,232
Number of fans in the district, ...	50

Table showing kind of opening method of ventilation, size of fan or furnace, capacity in cubic feet of air per minute, volume per minute supplied to each employe, whether machine or pick mine, and type of machine in use.

Name of Mine.	Kind of Opening.	Method of ventilation.	Dimensions of fan or furnace.	Capacity in cubic feet per minute.	Cubic feet per minute supplied to each employe.	Whether pick or machine mine.	Type of Machine.
Pardee No. 3,	Drift,	Fan,	Seven feet,	31,500	217	Machine,	Air puncher.
Pardee No. 4,	Drift,	Fan,	Seven feet,	54,000	600	Machine,	Air puncher.
Pardee No. 5,	Slope,	Fan,	Seven feet,	29,200	690	Machine,	Air puncher.
Pardee No. 6,	Drift,	Fan,	Seven feet,	20,000	383	Machine,	Air puncher.
Pardee No. 7,	Slope,	Fan,	Twelve feet,	39,000	800	Machine,	Air puncher.
Flanigan No. 8,	Drift,	Fan,	Seven feet,	69,000	253	Machine,	Electric chain.
Flanagan No. 9,	Drift,	Fan,	Seven feet,	48,000	960	Pick.	
Columbia No. 12,	Drift,	Fan,	Seven feet,	56,000	400	Machine,	Electric chain.
Moshannon No. 13,	Drift,	Furnace,	Six by five feet,	19,000	322	Pick.	
Ashcroft No. 14,	Drift,	Furnace,	Five by four feet,	15,000	375	Pick.	
Webster No. 7,	Slope,	Fan,	Seven feet,	16,000	114	Machine,	Air puncher.
Webster No. 9,	Shaft,	Fan,	Twelve feet,	45,000	790	Pick.	
Webster No. 10,	Slope,	Fans,	Eight and a seven foot,	50,000	185	Machine,	Electric chain.
Webster No. 11,	Drift,	Fan,	Seven feet,	37,000	316	Machine,	Electric chain.
Webster No. 12,	Drift,	Fan,	Seven feet,	38,000	402	Machine,	Electric chain.
Webster No. 13,	Slope,	Fan,	Seven feet,	18,000	300	Pick.	
Webster No. 14,	Drift,	Fan,	Seven feet,	15,390	500	Machine,	Air puncher.
Gallitzin,	Shaft,	Fan,	Twelve feet,	25,000	150	Machine,	Electric chain.
Lackawanna No. 1,	Drift,	Fan,	Six feet,	17,000	150	Machine,	Electric chain.
Lackawanna No. 2,	Drift,	Fan,	Six feet,	8,000	200	Pick.	
Big Bend,	Drift,	Fan,	Seven feet,	16,000	135	Machine,	Air puncher.
Victor No. 2,	Drift,	Fan,	Seven feet,	28,000	470	Pick.	
Victor No. 3,	Drift,					Pick.	
Victor No. 4,	Drift,	Furnace,	Six by six feet,	7,000	108	Pick.	
Patton No. 3,	Drift,	Furnace,	Five by ten feet,	10,000	210	Pick.	
Oak Ridge,	Drift,	Furnace,	Five by ten feet,	11,235	140	Machine,	Air puncher.
Greenwich No. 1,	Drift,	Furnace,	Six by ten feet,				
Alpha,	Drift,	Furnace,	Nine by five feet,	8,875	225	Pick.	
Delaney,	Drift,	Fan,	Fifteen feet,	65,000	185	Machine,	Air puncher.
Horse Shoe,	Drift,	Furnace	Nine by five feet,	14,800	200	Pick.	

Table showing method of ventilating and quantity of air in cubic feet per minute circulating in each mine—Continued.

Name of Mine.	Kind of Opening.	Method of ventilation.	Dimensions of fan or furnace.	Capacity in cubic feet per minute.	Cubic feet per minute supplied to each employe.	Whether pick or machine mine.	Type of Machine.
Bradley No. 1,	Drift,	Furnace,	Six by five feet,	4,500	320	Pick.	
Bradley No. 2,	Drift,	Furnace,	Six by five feet,	8,000	220	Pick.	
Bradley No. 3,	Shaft,	Furnace,	Six by five feet,	8,000	220	Pick.	
Walnut No. 1,	Drift,	Furnace,	Twelve by six feet,	18,870	510	Pick.	
Walnut No. 2,	Drift,	Furnace,	Eight by six feet,	12,000	500	Pick.	
Lincoln,	Drift,	Furnace,	Small,	3,500	200	Pick.	
Cymbria No. 1,	Drift,	Fan,	Seven feet,	30,000	400	Machine,	Electric chain.
Cymbria No. 2,	Drift,	Furnace,	Five by eight feet,	5,400	340	Pick.	
Gussie,	Drift,	Fan,	Seven feet,	12,870	475	Machine,	Air puncher.
Van Ormer,	Drift,	Furnace,	Seven by six feet,	3,000	150	Pick.	
Mancher,	Drift,	Fan,	Seven feet,	23,000	253	Pick.	
Stirling No. 10,	Drift,	Furnace,	Sixty-four feet,	3,400	226	Pick.	
Lancashire No. 3,	Slope,	Furnace,	Nine by five feet,	21,000	310	Machine,	Air puncher.
Lancashire No. 4,	Drift,	Furnace,	Nine by five feet,	......	......	Pick.	
Lancashire No. 6,	Drift,	Fan,	Sixteen feet,	26,000	433	Machine,	Electric chain.
Lancashire No. 7,	Drift,	Furnace,	Nine by five feet,	10,087	75	Machine,	Electric chain.
Lancashire No. 8,	Slope,	Fan,	Sixteen feet,	67,000	500	Machine,	Electric chain.
Lancashire No. 9,	Drift,	Furnace,	Nine by five feet,	......	......	Pick.	
Juniata,	Drift,	Furnace,	Nine by four feet,	......	......	Pick.	
Allport No. 1,	Drift,	Furnace,	Twelve by six feet,	21,000	350	Machine,	Air puncher.
El Mora,	Drift,	Fan,	Seven feet,	14,000	170	Machine,	Air puncher.
West Branch,	Drift,	Fan,	Ten feet,	50,000	213	Machine,	Air puncher.
Stirling No. 1,	Drift,	Fan,	Six feet,	26,000	680	Machine,	Air puncher.
Stirling No. 3,	Drift,	Furnace,	Nine by five feet,	10,000	450	Machine,	Air puncher.
Stirling No. 5,	Drift,	Furnace,	Six by five feet,	......	......	Machine,	Electric chain air puncher.
Vinton,	Drift,	Fan,	Six feet,	14,875	140	Machine,	Air puncher.
Empire,	Drift,	Fan,	Ten feet,	45,000	236	Pick.	
Eclipse,	Drift,	Furnace,	Eight by four feet,	4,580	351	Pick.	
Rich Hill,	Drift,	Furnace,	Ten by six feet,	6,000	175	Pick.	
Flinton,	Drift,	Furnace	Six by five feet,	5,000	200	Pick.	
Daugherty,	Drift,	Furnace,	Six by five feet,	4,000	......	Pick.	

Kelley,	Drift,	Natural,				Pick.	
Susquehanna,	Drift,	Furnace,	Six by six feet,	11,000	300	Pick.	
Durham No. 1,	Slope,	Fan,	Twelve feet,	22,000	295	Pick.	
Durham No. 2,	Drift,	Fan,	Twelve feet,			Pick.	
Kearney No. 1,	Drift,	Fan,	Twelve feet,	30,000	500	Pick.	
Fisher,	Drift,	Furnace,	Ten by five feet,	30,800	800	Pick.	
Bacon,	Drift,	Furnace,	Six by five feet,	10,800	360	Pick.	
Hickes Nos. 1 and 2,	Drift,	Natural,				Pick.	
Fulton,	Slope,	Fan,	Six feet,	12,000	375	Pick.	
Warner,	Drift,	Furnace,	Four by four feet,	13,000	475	Pick.	
Ivory Hill,	Drift,	Natural,				Pick.	
Blacks,	Drift,	Natural,		10,000	222	Pick.	
Bennington,	Slope,	Fan,		15,000	207	Pick.	
Manion,	Drift,	Furnace,	Seven by five feet,	22,000	330	Machine,	Air puncher.
Spangler,	Drift,	Furnace,	Four by four feet,	11,200	300	Pick.	
Melrose,	Drift,	Furnace,	Eight by five feet,	11,000	150	Pick.	
Stirling No. 8,	Drift,	Fan,	Twelve feet,	21,800	123	Machine,	Air puncher.
Delta,	Drift,	Fan,	Six feet,	25,000	250	Machine,	Air puncher.
Blubaker No. 13,	Drift,	Furnace,	Six by five feet,	16,800	289	Pick.	
Dean No. 8,	Slope,	Fan,	Twelve feet,	30,500	210	Machine,	Air puncher.
Dean No. 9,	Drift,	Furnace,	Twelve by six feet,	Idle.		Pick.	
Dean No. 10,	Drift,	Fan,	Twelve feet,	45,000	610	Pick.	
Woodvale,	Shaft,	Fan,	Sixteen feet,	43,000	573	Pick.	
Robertsdale,	Slope,	Fan,	Sixteen feet,	38,000	168	Pick.	
Cunard No. 1,	Shaft,	Fan,	Twelve feet,	20,000	243	Pick.	
Cunard No. 2,	Slope,	Furnace,	Six by five feet,	8,000	300	Pick.	
Crescent No. 1,	Slope,	Fan,	Twelve feet,	12,000	109	Pick.	
Crescent No. 2,	Drift,	Furnace,	Six by four feet,	11,800	100	Pick.	
Crescent No. 3,	Drift,	Natural,		6,200	148	Pick.	
Cambria No. 1,	Drift,	Natural,		8,000	112	Pick.	
Chevington No. 1,	Drift,	Natural,		3,000	230	Pick.	
Chevington No. 2,	Drift,	Natural,		6,542	177	Pick.	
Glen White,	Slope,	Fan,	Ten feet,	14,400	146	Pick.	
Cambria No. 3,	Shaft,	Fan,	Ten feet,	28,000	400	Pick.	
Cambria No. 2,	Slope,	Fan,	Six feet,	Idle.			
Puritan No. 4,	Slope,	Furnace,	Six by four feet,	7,500	250	Pick.	
Nant Y Glo No. 1,	Drift,	Fan,	Seven feet,	12,000	200	Pick.	
Nant Y Glo No. 2,	Drift,	Furnace,	Seven by four feet,	4,500	400	Pick.	
Black Diamond,	Drift,	Furnace,	Seven by four feet,	4,900	300	Pick.	
Ocean No. 1,	Drift,	Natural,		2,700	225	Pick.	
Ocean No. 2,	Drift,	Natural,		12,000	400	Pick.	
Ocean No. 3,	Drift,	Furnace,	Seven by four feet,	5,000	250	Pick.	
Carbon,	Drift,	Natural,		6,000	115	Pick.	
Richland,	Drift,	Furnace,	Six by four feet,	4,000	150	Pick.	

Description of Mines and Improvements.

Black Lick Branch.—Ivory Hill, Black Lick branch, this is a small mine working only five men. The company is now opening a slope into a large territory of coal, and will be able to produce a large output in the near future.

Webster No. 14.—This mine is in a fair condition as to ventilation and drainage. The coal is mined by puncher machines.

Nant-Y-Glo No. 1.—This mine was not in a good condition as regards ventilation, especially on one side of the mine, but the mine foreman was making every effort to improve its condition, which I have since learned has been done. There is a great mistake made by operators who are continually changing their foreman. The operators, miners, and the mine, invariably suffer from this cause. A rope haulage plant has been installed during the year doing away with the incline, by which the coal was formerly brought near the drift mouth, which is a great improvement in the haulage.

Big Bend Mine.—This mine is opened along a limited territory which has caused them to have worked nearly one and a half miles along the crop. The ventilation in cold weather is poor. The fan, which is stationed at the first opening that was made, is too far away from the present workings to have any effect, and upon my last visit I requested that the fan be removed to another opening, which is near the present workings. The drainage is also troublesome, because of the roads being driven along the crop line.

Vinton Colliery.—Is worked exclusively on the long wall method, which means taking out all the coal, after leaving pillars to protect the entries, and throwing the roof down behind them, keeping the face of the coal clear with a battery of props. Conveyors are used to bring the coal to the roadway, sufficient bottom being taken up on the roadway to allow the car to be low enough so that the conveyors empty the coal into the car. This system of ventilating is the best, because the current is constantly traveling along the face of the coal. On each visit it was in a good sanitary condition.

Lackawanna No. 1. is now becoming so extensive that a larger fan would be a great improvement. The air at the face of the workings was very weak on my last visit. Every effort is being put forth to make a connection between the working faces and an outlet, which is 200 feet above the present outlet. When this is connected, the fan, which is reversible, will produce a larger volume, and the face of the workings can be better ventilated. The drainage is good. Preparations are being made to work this mine on long wall method.

Lackawanna 2.—This mine is worked on the long wall method. The ventilation could be improved by moving the fan to another opening, as it is useless where it is now, but the management informs me that they are going to move it. There is so much difference in the elevation of the two openings, that when the temperature inside and outside of the mine differs, there is a current traveling. But such ventilation cannot be relied upon. The drainage is good.

Lincoln Mine.—On my visit I found the ventilation was very weak —a temporary furnace, which was inadequate. At present, I am informed, a shaft is being sunk, and a new furnace is being constructed, which will put the mine in good condition. The drainage is good.

Mines Along the Cambria and Clearfield Branch.

Black Diamond.—This mine did not come under the law until the latter part of the year, so I have not yet visited it.

El Mora.—This mine was in a very good condition when I inspected it, both as to ventilation and drainage.

A new seven foot fan has been installed at this mine during the year, which gives ample ventilation.

Nant Y Glo. No. 2.—This mine did not come under the provisions of the law until the latter part of the year, and has not been inspected.

Stirling No. 1.—This mine was in good condition when inspected, both as to ventilation and drainage. A new seven foot fan and compressor has been installed; the latter supplies power for machines in the No. 1 mine and Emma Nos. 3 and 5 mines.

Emma Nos. 3 and 5.—This mine was in a fair condition when inspected. Ventilation and drainage were very fair.

Blubaker No. 13.—Ventilation was not as good at the face of the workings as it should have been. The furnace is too small for the mine. They were forcing one of the heading to get out the other side of the hill, not turning any rooms, the intention being to mine the coal by machines, and to get the power from Stirling No. 1, through the heading when it will be driven out. The drainage was fair.

Gussie Mine.—Was in a good condition both as to ventilation and drainage. An air compressor has been built and the coal is now mined by machines.

Susquehanna Mine.—Was in a fair condition when inspected.

Allport No. 2 has changed owners during the year, and is now owned by R. Peale. It is known as Victor No. 2. It was worked but little during the year, but was in very fair condition when inspected, both ventilation and drainage being good.

Carrolltown Mines, on the Beach Creek Railroad, Eclipse Mine.—Is in a very faulty territory, the sand rock pinching the coal nearly all out. The management still continues to penetrate into the hill, believing that they will eventually be rewarded by securing the vein in its proper thickness. I found the ventilation fair for the number of men employed. The drainage was good.

Maucher Mine.—Is in very fair condition as regards ventilation and drainage. The roof, over part of the workings is very bad, necessitating great care in timbering. Being full of loose joints, the cover is shallow.

Brawley or as now named, Victor No. 3, was in a good condition.

Snyder, now named Victor No. 4, is a new opening, and the operator was at the time of my inspection preparing to place a new furnace in it. They are forcing a heading to connect this mine with Victor No. 3.

Patton Mine.—Is the last in the group near Carrolltown. It is a small mine, ventilated by furnace, and I found a fair quantity of air for the number of men employed, but I do not approve the system of ventilation, although I found it was difficult to conduct it otherwise. The air is carried through the rooms on the inlet side for a short distance, necessitating canvas sheets on each room. The leakage was so great that the air near the face was very weak. But, I found that the foreman was making preparations for the inside workings, to do away with this system and conduct air through the rooms by check canvas on the heading, using one heading for a return airway. The drainage was fair.

Spangler Mine.—Is about exhausted. Its solid coal (unless they can buy more land which lies adjacent to this mine) has nearly all been taken out. The ventilation is poor at the extreme end of the workings, the furnace being inadequate for the work required of it, and should more coal be taken out through the mine, they will be compelled to get better ventilating apparatus. The drainage was very fair.

West Branch Mine.—Is the only mine in the district that generates explosive gases. It is ventilated by a Capell fan producing 50,000 cubic feet at a pressure of three and one-half inches water gauge.

The ventilation is well conducted to the face of the workings, as no pillars have as yet been drawn in the mine as they are awaiting an outlet for drainage, and the excavation is being rapidly developed. There are two fire bosses employed, and the mine is being generally well cared for.

Walnut Run Mines.

Alpha is a small mine fairly well ventilated, but the drainage could be considerably improved.

Juniata.—This mine has been idle during the year, except that a little work was done in December.

Delta Mine.—A seven foot fan was installed during the year, replacing the furnace which had become inadequate, but since the fan has been working, I have found it in a good sanitary condition. The only requirements that I noticed was the necessity of splitting the current, which I found the foreman was preparing to do.

Allport No. 1.—This mine was upon each visit in good condition. There are two seams being worked with an incline plane from the lower to the upper one, barneys being attached to the ropes; its general condition is very good.

Walnut Run No. 1.—This is a small mine and nearly exhausted, but preparation is being made to open in the upper seam. It was in a good condition as regards ventilation, but the drainage could be improved.

Cymbria Nos. 1 and 2, are opened in two seams of coal above each other. No. 1 is ventilated by a seven foot Stine fan, and was in a fair condition. The drainage was good. No. 2 is in the upper seam, and is not extensively developed. It is ventilated by a furnace and was in a very fair condition, but the drainage was not so good.

Manion Mine.—I found to be opened on modern principles. Ventilation and drainage were also good.

Lancashire No. 7 has become an extensive operation, and the furnace used to produce the ventilation is inadequate to supply the minimum quantity prescribed by law, viz: 100 cubic feet per minute for each employe. This would not be sufficient to keep the mine in a healthful condition, which I believe is the best way, so as to have sufficient velocity to carry away the large quantity of powder smoke produced. Upon my last inspection I notified the management of the necessity for a change in the condition of the ventilation, to which they replied that every effort would be made to have the mine in compliance with the Bituminous mining law.

Lancashire Nos. 6 and 8.—Are connected and ventilated by a 16-foot Brazil fan, which has been installed during the year, doing away with the furnace which was not sufficient to ventilate these mines. Upon my last visit I found them in a good condition both as to ventilation and drainage.

Empire Mine.—Is on the Beech Creek road, and was in a fair condition as to ventilation and drainage.

Lancashire No. 3.—This mine was upon my last inspection in a very fair condition as to ventilation and drainage. Powder was found stored at the tipple, which is prohibited by law, but which at my request has since been removed.

Walnut No. 2.—Only worked during December.

On the Beech Creek Railroad.

Pardee Nos. 2 and 3, are connected and are ventilated by a fan. On my visit to No. 2 I found it in a good condition, but No. 3 being extensive and the coal nearly exhausted at the far end, the ventilation was very defective. The drainage was not very good.

Columbia No. 12.—This mine is extensive and was on my last inspection in a very fair condition both as to drainage and ventilation.

Pardee No. 5.—This mine has not been opened long and encountered considerable trouble from rock rolls, completely cutting the coal out. The plant is well equipped with machinery, and the inside workings are in a good condition.

Ashcroft Mine.—Is one that is now experiencing the effects of contracting it out for cheap coal. The air courses are in very bad condition, the seam being but three and one-half feet high. Sediment was allowed to gather in the low places until it is with difficulty that air can be gotten to the face of the workings. On my inspection I notified the foreman that he must improve the condition of ventilation. The drainage was good.

Moshannon Mine.—Was in good condition on both my visits.

Flanagan No. 8.—This is an extensive mine, and while I measured 67,000 cubic feet at the fan, I found that an extensive part of the workings were deficient of air. The operators intend to put a shaft down in this part, which will put the mine in a good condition as regards ventilation, enabling the air to be divided into splits, which is badly needed. The drainage was good.

Flanagan No. 9.—This mine is connected with No. 8 and being the intake for No. 8 mine was in good condition.

Pardee No. 6.—This mine was, on my last inspection, in a good condition both as regards drainage and ventilation.

Pardee Nos. 4 and 7.—These mines are connected, No. 4 working the upper seam, while No. 7 is a slope opening into the lower seam. Both were found in very good condition. Every detail was being carefully looked after by the foreman in charge.

Stirling No. 10.—This mine was idle until October, when it was let by contract, and is now worked by twelve men. It was in fair condition as to ventilation and drainage.

Puritan No. 4 is a small mine. The coal is reached by a short slope, all coal having been mined above water level by a drift. There are about twenty-two men employed and on my inspection it was in a poor condition as regards ventilation. The furnace was not being used, neither was it in a condition for use. I informed the superintendent of the conditions, and he promptly attended to the matter. The drainage was fair.

Stirling No. 8.—This is an extensive mine and considerable improvement has been made to it during the year. 12-foot Stine fan has replaced the 7-foot fan, and about one mile of brick stopping has been put up along the main road separating the intake and return, which has sent a fair volume of air to the face of the workings.

Rich Hill Mine.—Has been newly opened, and is in a fair condition.

Oak Ridge.—The old part of this mine is nearly exhausted, and they are now going to the dip, and putting in a rope haulage system. A compressor has been installed during the year. The mine was in good condition, both ventilation and drainage being very fair.

Webster No. 12 is a slope working the "C" vein, which is about three and one-half feet high. The ventilation was defective at the face of the workings, which was caused by poor stoppings between the intake and return. Drainage was also poor.

Webster No. 13.—This mine is working the upper vein, and is extensive. The ventilation was poor at the face of the workings, although a large volume was measured at the fan, and an effort is being made to reach a point in the hill that will enable them to make an outlet. The drainage was fair.

Mines on the Clearfield and Cresson Branch.

Webster No. 7.—This mine is in fair condition, except at the face of the valley headings, where the ventilation was weak. The company is about to make some important changes, which will improve its condition. Drainage is good.

Richland Mine was idle the latter part of the year and was not inspected.

Dean No. 10.—This is a new mine and is in a very good condition. Ventilation and drainage is good.

Dean No. 9 was idle during the latter part of the year.

Dean No. 8.—This mine works the lowest vein of coal in the district that is being worked by machines. It is but three feet high, and it is surprising how economically it is worked. It is a slope on a grade of about four per cent., makes considerable water, and has a long distance to pump. The mine is well cared for, but they will be compelled to make a new opening in the near future. Ventilation and drainage are very fair.

Van Orma Nos. 1 and 2.—No. 1 is opened in the lower seam. No. 2 is opened in the upper seam. They are connected, and each ventilated by a furnace. It is a small operation, and was in fair condition.

Beaver Dam mine has been practically idle since February.

Flinton mine is a small one, and has been doing but very little, not coming under the law since early in the year.

Mines Adjacent to the Pennsylvania Railroad.

Webster No. 9 is a shaft located at Cresson. On my last visit the ventilation had been considerably improved from my former visit, but in some of the face workings it was still deficient. Drainage was very fair.

Gallitzin shaft, located at Gallitzin, was on my first visit very deficient in ventilation at the face of the workings. On my last visit it had been considerably improved, although the quantity measured at the fan was much less than the former measurement. It was being well conducted to the face of the workings. The drainage was very fair.

Webster No. 10, located at Gallitzin, is a slope with very extensive area. Some parts of the workings were in a good condition, while others were not as regards ventilation. The fan is too small for so extensive a working. I measured 63,000 cubic feet while 100,000 is little enough for so large a working. The drainage was good.

Webster No. 11 is located at the east end of the Tunnel Hill in Blair county. It was in a very fair condition, both as to drainage and ventilation.

Bennington mine is located at the east end of the Tunnel, and was in a fair condition as regards ventilation. Drainage was not very good. The timber in the slope road was decaying and becoming dangerous, which was caused by the steam line which operated the pumps. The operation has changed ownership and the timbers are being replaced by new ones.

Bradley No. 1 is a small mine located at Bennington. It was in a fair condition.

Bradley Nos. 2 and 3 are also small operations. There were in fair condition. Ventilation and drainage were fair.

Glen White mine located at Kittanning Point, was in fair condition; ventilation and drainage were fair.

Horse Shoe Mine.—Is a small one working low coal. It was in fair condition; drainage and ventilation were fair.

Delaney No. 5.—This mine was in a very good condition, all details being carefully looked after. Ventilation and drainage are very good.

Delaney No. 4 is a small mine, and was in fair condition.

Mines in Bedford County.

Chevington Nos. 1 is a small mine and there has been a great deal of trouble before reaching workable coal. It was in fair condition.

Crescent No. 1 is connected with another old mine through which part of the coal is taken. It was in very fair condition. Its present output is confined to pillar work, and it will soon be exhausted.

Cambria No. 1 is connected with the Crescent mine, and was in fair condition as regards ventilation and drainage.

Chevington No. 2 is a small mine, working nine men. It was in fair condition.

Kearney.—There is a slope and drift at this place which are connected. Owing to labor troubles this mine was idle all summer. It is connected with other mines, Crescent No. 1 and Carbon. The strength of the cover over it is marvelous, as old mines are still standing for miles, allowing large currents of air to travel through them, the difference in elevation being 200 feet and more, between openings, that the least difference in the temperature between the inside and outside of the mine causes a current to flow. I measured in the mine 30,000 cubic feet. This strong cover also allows the workings to be driven in a reckless manner, there being no system whatever followed, rooms being turned off rooms, in the mine.

Cambria Nos. 2 and 3.—Cambria No. 2 was idle throughout the year. Cambria No. 3, located at Langdondale, is a shaft working. Ventilation and drainage were very fair. The manway out of this mine was not in good condition, but preparations were being made to remedy it.

Mines on Six Mile Run.

Durham No. 1 is almost exhausted. It was in good condition.,

Durham No. 2 did not work until the last of the year, and was not inspected.

Boom Mine.—This mine has been idle and is filled with water.

Cunard Nos. 1 and 2.—No. 1 is a shaft and there is great difficulty from rolls and anticlinals. It is in very fair condition, both as to drainage and ventilation. No. 2 is a small slope mine. It was in good condition.

Crescent No. 2.—The furnace in this mine was found inadequate to properly ventilate the mine, the main airway being small. They have now enlarged the airway which will improve its condition until a fan can be installed.

Bacon.—This is a new mine and is in a good condition.

Gates Mine.—A new fan was installed during the latter part of the year, and the mine being small it is now well ventilated. Drainage is fair.

Crescent No. 3.—This mine was in poor condition, low coal and no artificial means of ventilation. They are now sinking a shaft to install a furnace, which will put it in a good condition, as regards ventilation. Drainage is fair.

Warner.—This mine is small, with considerable difference in the elevation of the outlet and inlet. It was in fair condition, as to drainage and ventilation.

Mines in Huntingdon County.

Hicks Nos. 1 and 2.—No. 1 was in fair condition, working coal on the left side of a steep anticlinal. No. 2 mine is working the coal on the right side, with a pitch of about forty degrees. There were only ten men employed when it was inspected and it was in fair condition for such a small number of men.

Melrose.—At this time there is trouble with a large synclinal, which enlarged as the openings penetrated the hill, causing them to diverge from each other. The synclinal being between the two openings, and as they were driven quite a distance before any connection could be made, the ventilation was very poor, although a furnace was provided for each opening, but now that connection has been made, the mine is in very fair condition. Drainage is fair.

Ocean No. 1 was in fair condition as regards drainage and ventilation, but rock rolls, anticlinals, etc., left but very little coal, so that only a few men could work during the latter part of the year.

Ocean No. 3 is composed of three openings driven a short distance into the hill, working twenty men, and was in good condition.

Ocean No. 2 is an old mine.—The ventilation in one part was very poor, but efforts were being made to drive through to another mine, which would put that part of the mine in a good condition. Drainage was fair.

Fisher Mine.—Is also an old mine. The ventilation was very fair. Drainage was not good.

Carbon.—This mine was in fair condition, both as to drainage and ventilation.

Black mine is a small one which was opened on the single entry system, carrying a gob aircourse which came to an end, as no air could be brought to the face of the workings. On my last visit, a shaft had been put down near the face, and the ventilation was good. Drainage was fair.

Mines on the East Broad Top Railroad.

Robertsdale Slope and Shaft.—These mines are connected, and were in fair condition as regards ventilation and drainage. A fire was discovered by the foreman on October 5, in the upper seam in some of the old workings. A strike of ten weeks had occurred during the summer, during which time part of the mine was flooded shutting the air off other parts of the mine. After the water was taken out and the air circulated, the heat generated by the wet sulphur, came into action, causing the gob, coal and slate to take fire. Strenuous efforts were made in trying to extinguish it, which did not meet with success, when it was bratticed off with double boards, with clay tamped between them, A water gauge and thermometer reading was taken each day. The latter was inserted through a pipe several feet long so that the readings both inside and outside the brattice were taken, which recorded sixty degrees outside and ninety degrees inside the brattice. Two men were detailed to keep watch on the slope side at night, and two on the shaft side. By day there was one man on each side to look after it. No pressure was indicated by the water gauge and large quantities of blank damp were given off and carried away with the return air on each side of the enclosure. The same conditions exist at this time, it being now more than four months since it was first discovered. It is now thought that there cannot be any fire burning, but the heat is still retained and it may last a long time. The peculiar conditions surrounding the fire are caused by the reckless manner in which coal had been mined, leaving no substantial pillars to enable masonry to be put around the fire for the purpose of smothering or drowning it out. The height of the two coals with its rock between them, also the elevation at which the fire is, would require an enormous quantity of water to extinguish it by drowning.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Tenth Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Webster Coal and Coke Co.						
Webster No. 7,	Cambria,	J. H. Tonkin,	Gallitzin,	W. C. Shaffer,	Gallitzin,	Pennsylvania Railroad.
Webster No. 9,	Cambria,	J. H. Tonkin,	Gallitzin,	W. C. Shaffer,	Gallitzin,	Pennsylvania Railroad.
Webster No. 10,	Cambria,	J. H. Tonkin,	Gallitzin,	W. C. Shaffer,	Gallitzin,	Pennsylvania Railroad.
Webster No. 11,	Blair,	J. H. Tonkin,	Gallitzin,	W. C. Shaffer,	Gallitzin,	Pennsylvania Railroad.
Webster No. 12,	Cambria,	J. H. Tonkin,	Gallitzin,	W. C. Shaffer,	Gallitzin,	Pennsylvania Railroad.
Webster No. 13,	Cambria,	J. H. Tonkin,	Gallitzin,	W. C. Shaffer,	Gallitzin,	Pennsylvania Railroad.
Webster No. 14,	Cambria,	J. H. Tonkin,	Gallitzin,	W. C. Shaffer,	Gallitzin,	Pennsylvania Railroad.
Rockhill Iron and Coal Co.						
Robertsdale slope,	Huntingdon,	L. L. Logan,	Robertsdale,	L. L. Logan,	Robertsdale,	E. B. T. R. R.
Woodvale shaft,	Huntingdon,	L. L. Logan,	Robertsdale,	L. L. Logan,	Robertsdale,	E. B. T. R. R.
Duncan & Spangler.						
Blubaker No. 8,	Cambria,	C. W. Stewart,	Hastings,			Pennsylvania Railroad.
Blubaker No. 13,	Cambria,	C. W. Stewart,	Hastings,			Pennsylvania Railroad.
Blubaker No. 11,	Cambria,	C. W. Stewart,	Hastings,			Pennsylvania Railroad.
Delta,	Cambria,	C. W. Stewart,	Hastings,			Pennsylvania Railroad.
Madeira Hill C. M. Co.						
Mannion,	Cambria,	F. G. Betts,	Clearfield,	Thos. Estep,	Barnesboro,	Pennsylvania Railroad.
Spangler,	Cambria,	F. G. Betts,	Clearfield,	Geo. McCornick,	Spangler,	Pennsylvania Railroad.
E. Eichelberger & Co.,						
Fisher,	Huntingdon,	E. Eichelberger,	Saxton,			H. and B. T. R. R.
Bacon,	Bedford,	E. Eichelberger,	Saxton,			H. and B. T. R. R.
Beech Creek Coal & Coke Co.						
Pardee No. 3,	Cambria,	W. C. Lingle,	Patton,	W. C. Lingle,	Patton,	New York Central R. R.
Pardee No. 4,	Cambria,	W. C. Lingle,	Patton,	W. C. Lingle,	Patton,	New York Central R. R.
Pardee No. 5,	Cambria,	W. C. Lingle,	Patton,	W. C. Lingle,	Patton,	New York Central R. R.
Flanigan No. 8,	Cambria,	W. C. Lingle,	Patton,	W. C. Lingle,	Patton,	New York Central R. R.
Pardee No. 6,	Cambria,	W. C. Lingle,	Patton,	W. C. Lingle,	Patton,	New York Central R. R.
Flanagan No. 9,	Cambria,	W. C. Lingle,	Patton,	W. C. Lingle,	Patton,	New York Central R. R.
Columbia No. 12,	Cambria,	W. C. Lingle,	Patton,	W. C. Lingle,	Patton,	New York Central R. R.
Moshannon No. 13,	Cambria,	W. C. Lingle,	Patton,	W. C. Lingle,	Patton,	New York Central R. R.
Ashcroft No. 14,	Cambria,	W. C. Lingle,	Patton,	W. C. Lingle,	Patton,	New York Central R. R.
Taylor & McCoy C. & C.Co.						
Gallitzin shaft,	Cambria,	T. E. Dipner,	Gallitzin,			Pennsylvania Railroad.

Cresson and Clearfield Coal and Coke Co.						
Richland,	Cambria,	P. H. Walls,	Philadelphia,	F. P. McFarland,	Frugality,	Pennsylvania Railroad.
Dean No. 8,	Cambria,	P. H. Walls,	Philadelphia,	F. P. McFarland,	Frugality,	Pennsylvania Railroad.
Dean No. 9,	Cambria,	P. H. Walls,	Philadelphia,	F. P. McFarland,	Frugality,	Pennsylvania Railroad.
Dean No. 10,	Cambria,	P. H. Walls,	Philadelphia,	F. P. McFarland,	Frugality,	Pennsylvania Railroad.
Deringer Bros.						
Susquehanna,	Cambria,	W. Deringer,	Spangler,	W. Deringer,	Spangler,	Pennsylvania Railroad.
Empire Coal Mining Co.						
Empire,	Cambria,	R. A. Shillingford,	Clearfield,	Wm. Crichton,	Barnesboro,	New York Central R. R.
Eclipse,	Cambria,	R. A. Shillingford,	Clearfield,	W. R. Leachbetter,	Spangler,	New York Central R. R.
Elmora Coal Mining Co.						
Elmora Nos. 1 and 2,	Cambria,	J. B. Reed,	Elmora,			Pennsylvania Railroad.
Sterling Coal Co. No. 1,	Cambria,	J. B. Reed,	Elmora,			Pennsylvania Railroad.
Sterling Coal Co. Nos. 3 and 5,	Cambria,	J. B. Reed,	Elmora,			Pennsylvania Railroad.
Barnes & Tucker.						
Lancashire No. 3,	Cambria,	J. T. Slinger,	Barnesboro,	John Reed,	Barnesboro,	Pennsylvania Railroad.
Lancashire No. 4,	Cambria,	J. T. Slinger,	Barnesboro,	John Reed,	Barnesboro,	Pennsylvania Railroad.
Lancashire No. 6,	Cambria,	J. T. Slinger,	Barnesboro,	John Reed,	Barnesboro,	Pennsylvania Railroad.
Lancashire No. 7,	Cambria,	J. T. Slinger,	Barnesboro,	John Reed,	Barnesboro	Pennsylvania Railroad.
Lancashire No. 8,	Cambria,	J. T. Slinger	Barnesboro,	John Reed,	Barnesboro,	Pennsylvania Railroad.
Lancashire No. 9,	Cambria,	J. T. Slinger,	Barnesboro,	John Reed,	Barnesboro,	Pennsylvania Railroad.
Juniata,	Cambria,	J. T. Slinger,	Barnesboro,	John Reed,	Barnesboro,	Pennsylvania Railroad.
Crescent Coal Mining Co.						
Crescent No. 1,	Bedford,	John Langdon,	Hopewell,			H. & B. T. M. R. R.
Crescent No. 2,	Bedford,	John Langdon,	Hopewell,			H. & B. T. M. R. R.
Crescent No. 3,	Bedford,	John Langdon,	Hopewell,			H. & B. T. M. R. R.
Crescent No. 4,	Bedford,	John Langdon,	Hopewell,			H. & B. T. M. R. R.
John Langdon.						
Cambria No. 1,	Bedford,	John Langdon,	Huntingdon,			H. & B. T. M. R. R.
Chevington No. 1,	Bedford,	John Langdon,	Huntingdon,			H. & B. T. M. R. R.
Chevington No. 2,	Bedford,	John Langdon,	Huntingdon,			H. & B. T. M. R. R.
Lackawanna Coal & Coke Co.						
Lackawanna No. 1,	Cambria,	C. R. Claghorn,	Wehrum,	W. P. Morgan,	Vintondale,	Pennsylvania Railroad.
Lackawanna No. 2,	Cambria,	C. R. Claghorn,	Wehrum,	W. P. Morgan,	Vintondale,	Pennsylvania Railroad.
W. H. Sweet.						
Ocean No. 1,	Huntingdon,	W. H. Sweet,	Dudley,			H. & B. T. R. R.
Ocean No. 2,	Huntingdon,	W. H. Sweet,	Dudley,			H. & B. T. R. R.
Ocean No. 3,	Huntingdon,	W. H. Sweet,	Dudley,			H. & B. T. R. R.
Carbon,	Huntingdon,	W. H. Sweet,	Dudley,			H. & B. T. R. R.
Huntingdon No. 2,	Huntingdon,	W. H. Sweet,	Dudley,			H. & B. T. R. R.
Clear. Bit. Coal Corporation.						
West Branch,	Cambria,	R. A. Shillingford,	Clearfield,	Timothy McCarthy,	Barnesboro,	New York Central R. R.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Black Lick Mining Co.						
Big Bend,	Cambria,			A. J. McHugh,	Expedit,	Pennsylvania Railroad.
Colonial Iron Co.						
Durham No. 1,	Bedford,	Wm. Lander,	Riddlesburg,	J. C. Allan,	Riddlesburg,	H. B. T. R. R.
Durham No. 2,	Bedford,	Wm. Lander,	Riddlesburg,	J. C. Allan,	Riddlesburg,	H. B. T. R. R.
Vinton Colliery Co.						
Vinton,	Cambria,	R. G. Ware,	Vintondale,	R. G. Ware,	Vintondale,	Pennsylvania Railroad.
E. R. Jackman & Co.						
Maucher,	Cambria,	E. R. Jackman,	Carrolltown,	R. C. Morris,	Carrolltown,	New York Central R. R.
Rich Hill Coal Co.						
Rich Hill,	Cambria,	E. W. Samuel,	Mt. Carmel,	H. M. McAlarney,	Hastings,	Pennsylvania Railroad.
Gates Bros.						
Fulton Mine,	Bedford,	M. F. Gates,	Philadelphia,	M. F. Gates,		H. B. T. R. R.
J. E. Throop.						
Kearney,	Bedford,	J. E. Thropp, Jr.,	Earlston,	T. A. Jones,	Kearney,	H. B. T. R. R.
A. G. Hickes.						
Hickes No. 1,	Huntingdon,	A. G. Hickes,	Coalmont,	J. E. Roberts,	Coalmont,	H. B. T. R. R.
Hickes No. 2,	Huntingdon,	A. G. Hickes,	Coalmont,	J. E. Roberts,	Coalmont,	H. B. T. R. R.
Spangler C. & C. M. Co.						
Gussie,	Cambria,	James A. McClain,	Spangler,	Rush McFadgen,	Latrobe,	Pennsylvania Railroad.
Greenwich Coal and Coke Co.						
Greenwich No. 1,	Cambria,					Pennsylvania Railroad.
Oak Ridge Coal and Coke Co.						
Oak Ridge,	Cambria,	H. J. Van Dusen,	Hastings,			Pennsylvania Railroad.
Knight & Co.						
Alpha No. 1,	Cambria,	H. C. Williams,	Barnesboro,			Pennsylvania Railroad.
J. J. McGonigal.						
Patton No. 3,	Cambria,	J. J. McGonigal,	Carrolltown,			New York Central R. R.

John Harvey & Co.						
Sterling No. 10,	Cambria,	John Harvey,	Hastings,			Pennsylvania Railroad.
Altoona Coal & Coke Co.						
Delaney,	Cambria,	John Layed,	Altoona,	J. L. Munro,	Kittanning Point,	Pennsylvania Railroad.
Horse Shoe,	Blair,	John Layed,	Altoona,	J. L. Munro,	Kittanning Point,	Pennsylvania Railroad.
Bradley & Meagher.						
Bradley No. 1,	Blair,	F. H. Bradley,	Gallitzin,	F. H. Bradley,	Gallitzin,	Pennsylvania Railroad.
Bradley No. 2,	Blair,	F. H. Bradley,	Gallitzin,	F. H. Bradley,	Gallitzin,	Pennsylvania Railroad.
Bradley No. 3,	Blair,	F. H. Bradley,	Gallitzin,	F. H. Bradley,	Gallitzin,	Pennsylvania Railroad.
Rembrandt Peale.						
Victor No. 2,	Cambria,	Alex. B. Dunsmore,	Glen Richey,	A. M. Dunsmore,	Spangler,	New York Central R. R.
Victor No. 3,	Cambria,	Alex. B. Dunsmore,	Glen Richey,	A. M. Dunsmore,	Spangler,	New York Central R. R.
Victor No. 4,	Cambria,	Alex. B. Dunsmore,	Glen Richey,	A. M. Dunsmore,	Spangler,	New York Central R. R.
Glen White C. & L. Co.						
Glen White,	Blair,	Val Eichenlaub,	Glen White,			Pennsylvania Railroad.
Allport Coal Co. No. 1,	Cambria,	J. H. Allport,	Hastings,			Pennsylvania Railroad.
Allport Coal Co. No. 2,	Cambria,	J. H. Allport,	Hastings,			Pennsylvania Railroad.
The Walnut Run Coal Co.						
Walnut Run No. 1,	Cambria,	C. F. Fraser,	Altoona,	Peter Stewart,	Spangler,	Pennsylvania Railroad.
Walnut Run No. 2,	Cambria,	C. F. Fraser,	Altoona,	William Wood,	Barnesboro,	Pennsylvania Railroad.
Lincoln Coal Co.						
Lincoln,	Cambria,	C. F. Fraser,	Altoona,	T. H. Booth,	Nant Y Glo,	Pennsylvania Railroad.
Puritan Coal Mining Co.						
Puritan No. 4,	Cambria,	G. E. Scott,	Philadelphia,	Jas. Mc——,	Hastings,	Pennsylvania Railroad.
The Morrisdale Coal Co.						
Cunard shaft,	Bedford,	F. H. Wigton,	Philadelphia,	R. H. Kay,	Six Mile Run,	H. & B. T. R. R.
Cunard slope,	Bedford,	F. H. Wigton,	Philadelphia,	R. H. Kay,	Six Mile Run,	H. & B. T. R. R.
A. J. Black.						
Blacks,	Huntingdon,	A. J. Black,	Broad Top City,	Isaac Cook,	Broad Top City,	H. & B. T. R. R.
J. W. Dunwiddie.						
Nant Y Glo No. 1,	Cambria,	J. W. Dunwiddie,	Philipsburg,			Pennsylvania Railroad.
Nant Y Glo No. 2,	Cambria,	J. W. Dunwiddie,	Philipsburg,			Pennsylvania Railroad.
Bennington Coal & Coke Co.						
Bennington,	Blair,	R. H. Spendley,	Altoona,	Henry Newhart,	Gallitzin,	Pennsylvania Railroad.
S. V. Davis & Co.						
Flinton,	Cambria,	S. V. Davis,	Beccaria,	S. V. Davis,	Beccaria,	Pennsylvania Railroad.
Barker & Madill.						
Ivory Hill,	Cambria,	John Madill,	Nant Y Glo,	John Madill,	Nant Y Glo,	Pennsylvania Railroad.
Lambirth Coal Co.						
Warner,	Bedford,	C. Wilson,	Betz Bldg., Phila.,	G. McIntyre,	Six Mile Run,	H. & B. T. R. R.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
The Great Eastern Seaboard Co.						
Cambria No. 2,	Bedford,	Jas. Denithorn,	Huntingdon,	John Morris,	Langdondale,	H. & B. T. R. R.
Cambria No. 3,	Bedford,	Jas. Denithorn,	Huntingdon,	John Morris,	Langdondale,	H. & B. T. R. R.
Dougherty Coal Co.						
Dougherty No. 2,	Cambria,			J. H. Daugherty,	Altoona,	P. J. E. & E. R. R.
Kelly & Flanagan.						
Kelly No. 1,	Cambria,			C. H. Kelly,	Altoona,	P. J. E. & E. R. R.
Jackson & Walker.						
Black Diamond,	Cambria,	A. C. Jackson,	Carrolltown,			Pennsylvania Railroad.
Cymbria Coal Co.						
Cymbria,	Cambria,	D. E. Williams,	Philadelphia,	E. R. Musser,	Barnesboro,	Pennsylvania Railroad.
Saxton Furnace Co.						
Melrose,	Huntingdon,	Wm. Lander,	Riddlesburg,	Thos. Wilson,	Coalmont,	H. & B. T. R. R.

TABLE II—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Tenth Bituminous District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Webster Coal and Coke Co.														
Webster Colliery No. 7,	Cambria,	103,497.19	3,285	1,011.06	107,794.05	....	20	231.6	193	......	1	630	120	15
Webster Colliery No. 9,	Cambria,	20,239.10	1,950	710.19	22,900.09	....	......	180.4	56	......	......	200	900	7
Webster Colliery No. 10,	Cambria,	114,229	4,000	7,103	273,146	103,470	222	217.2	389	......	......	2,031	400	45
Webster Colliery No. 11,	Blair,	20,051.09	....	425	82,776.09	43,610	100	207	139	......	......	387	25	13
Webster Colliery No. 12,	Cambria,	34,697.13	2,977.18	741	12,630.07	90,300	152	259.2	222	......	......	1,169	200	24
Webster Colliery No. 13,	Cambria,	....	....	....	41,115.11	....	......	249.2	68	......	......	394	900	5
Webster Colliery No. 14,	Cambria,	31,344.05	900	....	32,244.05	....	......	204.2	63	......	......	230	315	11
Total,	....	324,059.16	13,112.18	9,991.05	686,278.06	237,380	494	221	1,130	......	1	5,041	2,850	120
Beech Creek Coal and Coke Co.														
Pardee No. 3,	Cambria,	120,557.12	2,920	443	123,920.12	....	......	203	173	......	......	263	....	27
Pardee No. 4,	Cambria,	51,542.02	2,920	65	54,527.02	....	......	125	168	......	......	272	100	10
Pardee No. 5,	Cambria,	41,501.14	1,825	101	43,427.14	....	......	149	93	......	......	124	200	6
Pardee No. 6,	Cambria,	44,323.13	....	89	44,412.13	....	......	162	76	......	......	120	....	8
Flanigan Run No. 8,	Cambria,	207,676.07	3,650	320	211,646.07	....	......	189	297	......	3	371	50	22
Flanigan Run No. 9,	Cambria,	31,887.17	....	26	31,713.17	....	......	139	56	......	1	66	....	6
Columbia No. 12,	Cambria,	79,672.07	1,095	68	80,835.07	....	......	154	191	......	......	272	....	16
Moshannon No. 13,	Cambria,	23,514.19	....	42	23,556.19	....	......	138	83	......	......	121	....	8
Ashcroft No. 14,	Cambria,	12,015.11	10	44	12,069.11	....	......	135	63	1	......	69	....	2
Total,	....	612,688.62	12,420	1,198	626,306.02	....	......	155	1,206	1	4	1,678	350	105

TABLE II— Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Cresson & Clearfield C. & Coke Co.														
Richland,	Cambria,	12,500	....	300	12,800	....	......	103	46	......	......	102	....	4
Dean No. 9,	Cambria,	93,792	2,550	30	96,372	....	......	182	166	......	......	728	100	10
Dean No. 8,	Cambria,	15,949	310	....	16,259	....	88	101	55	......	......	114	25	4
Dean No. 10,	Cambria,	43,178	130	1,150	44,458	....	......	172	93	......	......	446	100	5
Total,	....	165,419	2,990	1,480	169,889	....	88	140	360	......	......	1,390	225	23
Barnes and Tucker Coal Co.														
Lancashire No. 6,	Cambria,	50,282.13	....	....	50,282.13	....	......	189	75	......	......	250	1	8
Lancashire No. 8,	Cambria,	94,440.06	500	....	94,940.06	....	......	230	142	......	......	500	4	8
Lancashire No. 7,	Cambria,	115,877.01	700	....	166,577.01	....	......	244	170	......	......	1,100	2	7
Lancashire No. 3,	Cambria,	37,066.15	800	....	37,866.15	....	......	199	70	......	......	150	4	4
Lancashire No. 4,	Cambria,	1,210.07	....	1,014.10	2,224.17	....	......	122	3	......	......	10	....	1
Lancashire No. 9,	Cambria,	2,917.18	....	....	2,917.18	....	......	67	22	......	......	30	....	1
Juniata,	Cambria,	17,848	....	....	17,848	....	......	75	43	......	......	15	....	4
Total,	....	319,643	2,000	1,014.10	322,657.10	....	......	166	525	......	......	2,055	11	33
Altoona Coal and Coke Co.														
Delaney,	Cambria,	238,011	4,163	1,046	243,220	11,921	70	252	428	......	3	2,400	300	....
Horse Shoe,	Blair,	27,555	....	....	37,555	....	......	275	74	......	......	....	600	8
Total,	....	275,566	4,163	1,046	280,775	11,921	70	264	502	......	3	2,400	900	8
Empire Coal Mining Co.														
Empire,	Cambria,	171,813	2,575	652	175,040	....	......	191	249	......	2	950	200	14
Eclipse,	Cambria,	9,816	56	56	9,925	....	......	239	26	......	......	220	350	2
Total,	....	181,629	2,631	708	184,968	....	......	215	275	......	2	1,170	550	16

Crescent Coal Mining Co.														
Crescent No. 1,	Bedford,	72,113.66	951.13	310.14	73,375.13			257	115			125		12
Crescent No. 2,	Bedford,	63,503.09		252.10	63,855.19			258	103			300		10
Crescent No. 3,	Bedford,	19,613.15		2.4	19,615.19			240	51			100		3
Crescent No. 4,	Bedford,	2,001.18			2,001.18			75	4					1
Total,		157,232.8	951.13	663.8	158,849.09			208	273			525		26
John Langdon.														
Cambria No. 1,	Bedford,	44,592.09		453.04	45,045.13			251	70			100		8
Chevington No. 1,	Bedford,	9,738.01		210.02	9,948.03			176	9			25		1
Chevington No. 2,	Bedford,	17,527.01			17,527.01			258	30			50		3
Total,		71,857.11		663.06	72,520.17			228	109			175		12
Colonial Iron Co.														
Durham No. 1,	Bedford,	69,445	1,976	1,264	72,685	43,160	128	300	144			150		8
Durham No. 2,	Bedford,	8,034	62	62	8,096				109			50		9
Total,		77,479	2,038	1,264	80,781	43,160	128	200	253			200		17
Morrisdale Coal Co.														
Cunard shaft,	Bedford,	42,078.02	1,333.17	158.8	43,570.7			224.5	94			425	200	9
Cunard slope,	Bedford,	5,483.11	169.19	3.9	10,325.13	3,579	18	192.5	28			70		2
Total,		47,561.13	1,503.16	161.17	53,896	3,579	18	209	122			495	200	11
Robertsdale Iron and Coal Co.														
Robertsdale slope,	Huntingdon,	119,161.22	2,660.29	1,393	123,214.51			205	238		2	1,240	3,400	33
Woodvale shaft,	Huntingdon,	33,688.21	5,245.83	1,879	39,813.04			165	171		4	1,520	4,240	16
Total,		152,849.43	7,906.12	2,272	163,027.55			185	409		6	2,760	7,640	49
W. H. Sweet.														
Ocean No. 1,	Huntingdon,	10,971		350	11,321			253	22			110	2	1
Ocean No. 2,	Huntingdon,	21,869		150	22,019			253	43	1		222		8
Ocean No. 3,	Huntingdon,	22,862			22,862			253	43			228		2
Carbon,	Huntingdon,	29,959		150	30,009			253	53			300	8	8
Huntingdon No. 2,	Huntingdon,	2,597			2,597									
Total,		88,258		450	88,808			253	161	1		860		19
P. Geo. Hickes.														
Hickes Colliery No. 1,	Huntingdon	10,200	5	10	10,215			240	32			90	1,200	4
Hickes Colliery No. 2,	Huntingdon,	6,028			6,028			180	18			60	2,400	1
Total,		16,228	5	10	16,243			210	49			150	3,600	5
Lackawanna Coal and Coke Co.														
Lackawanna No. 1,	Cambria,	104,818	2,373	677	107,808			226	119	1		600	100	6
Lackawanna No. 2,	Cambria,							226	43		2	200	25	
Total,		104,818	2,373	677	107,808			226	162	1	2	800	125	6

TABLE II— Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Allport Coal Co.														
Allport No. 1,	Cambria,	105,490	500	100	106,090	......	......	206	118	......	......	1,000	100	18
Allport No. 2,	Cambria,	15,339	......	......	15,339	......	......	76	60	......	......	150	......	6
Total,	......	120,829	500	100	121,429	......	......	141	178	......	......	1,150	100	24
Rembrandt Peale.														
Victor No. 2,	Cambria,	479,677	95	142	482,047	......	......	196	96	......	......	513	100	5
Victor No. 3,	Cambria,	3,290.2	......	......	3,290.2	......	......	127¾	14	1	......	53	50	1
Victor No. 4,	Cambria,	3,861	......	60	3,921	......	......	23¼	40	......	......	30	......	6
Total,	......	55,118.2	95	202	55,415.2	......	......	116	150	1	......	596	150	12
Stirling Coal Co.														
Emma Nos. 3 and 5,	Cambria,	70,000	100	......	70,100	......	......	266	115	......	......	400	......	7
Stirling No. 1,	Cambria,	28,000	......	150	28,150	......	......	124	93	......	......	200	......	6
Total,	......	98,000	100	150	98,250*	......	......	195	208	......	......	600	......	13
Bradley & Meagher.														
Bradley No. 1,	Blair,	8,333	......	......	8,333	......	......	179	23	......	......	15	......	1
Bradley Nos. 2 and 3,	Blair,	16,667	......	50	16,717	......	......	179	54	......	......	15	......	19
Total,	......	25,000	......	50	25,050	......	......	179	77	......	......	30	......	20
E. Eichelberger & Co.														
Fisher,	Huntingdon,	18,455.1	......	150	18,505.1	......	......	277	35	......	......	300	2,500	4
Bacon,	Bedford,	14,529.9	......	50	14,579.9	......	......	265	31	......	......	75	100	4
Total,	......	32,985	......	200	33,185	......	......	271	66	......	......	375	2,600	8

Walnut Coal Co.														
Walnut No. 1, ...	Cambria, ...	22,265	......	......	22,205	......	......	123	48	......	......	125	......	5
Walnut No. 2, ...	Cambria, ...	2,372	......	26	2,398	......	......	30	22	......	......	8	......	2
Total, ...	......	24,637	......	26	24,663	......	......	77	70	......	......	133	......	7
Duncan & Spangler.														
Blubaker No. 8, ...	Cambria, ...	131,305	3,600	......	134,905	......	......	170	133	......	1	846	......	34
Blubaker No. 11, ...	Cambria, ...	10,128	......	......	10,128	......	......	150	11	......	......	48	......	1
Blubaker No. 13, ...	Cambria, ...	32,706	......	......	32,706	......	......	100	46	......	......	225	......	5
Delta, ...	Cambria, ...	47,947	1,200	......	48,147	......	......	92	73	......	......	345	......	15
Total, ...	......	222,086	4,800	......	225,886	......	......	103	263	......	1	1,464	......	55
Maderia Hill Coal Mining Co.														
Manion, ...	Cambria, ...	44,800	600	25	45,425	......	......	140	71	......	......	300	......	9
Spangler, ...	Cambria, ...	22,400	......	500	22,900	......	......	152.5	50	......	......	180	......	5
Total, ...	......	67,200	600	525	68,325	......	......	146	121	......	......	480	......	14
Dunwiddie & Hirsh.														
Nant Y Glo No. 1, ...	Cambria, ...	35,835.19	150	......	35,980.19	......	......	161	76	......	......	317	......	5
Nant Y Glo No. 2, ...	Cambria, ...	5,110	15	......	5,125	......	......	70	14	......	......	100	15	1
Total	......	40,945.19	165	......	41,105.19	......	......	116	90	......	......	417	15	6

Recapitulation

Webster Coal and Coke Co., ...	......	324,059.16	13,912.18	9,991.05	686,278.06	237,380	494	222.5	1,130	......	1	5,041	2,850	129
Beech Creek Coal and Coke Co., ...	......	612,688.62	12,420	1,198	626,306.02	......	......	178.5	1,206	1	4	1,678	350	105
Clearfield & Cresson C. & C. Co., ...	......	165,419	2,990	1,480	169,889	......	88	154.75	360	......	......	1,390	225	23
Barnes & Tucker, ...	......	319,643	2,000	1,014.10	322,657.10	......	......	190.6	525	......	......	2,055	......	33
Altoona Coal and Coke Co., ...	......	275,566	4,163	1,046	280,775	11,921	70	258.5	502	......	3	2,400	900	44
Empire Coal Mining Co., ...	......	181,629	2,631	708	184,968	......	......	217	275	......	2	1,170	550	16
Crescent Coal Mining Co., ...	......	157,232.8	951.13	665.8	158,849.01	......	......	266.75	273	......	......	525	......	26
John Langdon, ...	......	71,857.11	......	663.06	72,520.17	......	......	245.5	109	......	......	175	......	12
Colonial Iron Co., ...	......	77,479	2,038	1,264	80,781	43.160	128	287.5	253	......	......	200	......	17
Morrisdale Coal Co., ...	......	47,561.13	1,503.16	161.17	53,896.46	3,579	18	233	122	......	......	495	200	11
Robertsdale Iron Co., ...	......	152,869.43	7,906.12	2,272	163,027.55	......	......	185	409	......	6	2,760	7,640	49
W. H. Sweet, ...	......	88,258	......	450	88,808	......	......	253	161	1	......	960	......	19
P. Geo. Hickes, ...	......	16,228	5	10	16,243	......	......	231.5	49	......	......	150	3,600	5
Lackawanna Coal and Coke Co., ...	......	104,818	2,373	677	107,868	......	......	226	162	1	2	800	125	6
Allport Coal Co., ...	......	120,829	500	100	121,429	......	......	195.5	178	......	......	1,150	100	24
Rembrandt Peale, ...	......	55,118.9	95	202	55,415.9	......	......	204	151	1	......	596	150	12
Bradley & Meagher, ...	......	25,000	......	50	25,050	......	......	179	77	......	......	20	......	20
Stirling Coal Co., ...	......	98,000	100	150	98,250	......	......	185	208	......	......	600	......	13
E. Eichelberger & Co., ...	......	32,985	......	200	33,185	......	......	265	66	......	......	375	2,600	8
Walnut Coal Co., ...	......	24,637	......	26	24,663	......	......	76.5	70	......	......	133	......	7
Duncan & Spangler, ...	......	222,086	4,800	......	225,886	......	......	103	263	......	1	1,464	......	55
Maderia Hill Coal Mining Co., ...	......	67,200	600	525	68,325	......	......	146.25	121	......	......	480	......	14
Dunwiddie & Hirsh, ...	......	40,945.19	165	......	41,105.19	......	......	115.5	90	......	......	417	15	6

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Clearfield Bit. Coal Corp. West Branch,	....	234,948	4,085	419	239,452	....	......	225	279	......	1	1,100	250	20
Taylor & McCoy. Gallitzin shaft,	....	60,295.55	1,950	2,872.98	149,957.53	52,251	238	229.6	315	1	......	796	....	25
El Mora Coal Co. El Mora Nos. 1 and 2,	....	52,500	....	200	52,700	....	......	248	98	......	......	400	....	8
Glen White Coal and Lumber Co. Glen White,	....	20,249	2,304	2,302	66,380	28,422	80	247	147	1	......	700	....	12
Great Eastern Seaboard Coal Co. Cambria No. 3,	....	19,254.11	951.03	905.08	21,111.02	....	......	119	87	......	......	150	....	10
E. R. Jackman & Co. Maucher,	....	61,163	1,000	20	62,183	....	......	205	104	......	3	300	50	8
Vinton Colliery Co. Vinton,	....	74,467	1,000	....	75,467	....	8	271	145	......	......	711	270	7
J. J. McGonigal. Patton No. 3,	....	23,860	....	40	23,900	....	......	151	36	......	......	150	15	3
Knight & Co. Alpha,	....	17,263.8	....	....	17,263.8	....	......	150	36	......	......	99	250	3
Deringer Bros. Susquehanna,	....	22,786.38	....	250	23,036.38	....	......	171	45	......	......	220	....	4

Joseph E. Thropp. Kearney,	......	690	483	565	34,205	21,148	170	130	220	......	......	200	......	15
Gates Bros. Fulton,	......	36,000	396	30	36,426	......	......	264	45	......	......	550	......	5
Rich Hill Coal Co. Rich Hill,	......	7,870	......	136	8,006	......	......	107½	20	......	......	65	100	3
Spangler Coal and Coke Co. Gussie,	......	11,472.05	150	50	11,672.05	......	......	150	37	......	......	116	......	2
Daugherty Coal Co. Daugherty No. 2,	......	5,966	......	256	6,222	......	......	219	13	......	......	32	10	2
Lambirth Coal Co. Warner,	......	4,158.12	......	......	4,158.12	......	......	54	53	......	......	75	......	4
Kelly & Flanagan. Kelly No. 1,	......	5,624	......	50	5,674	......	......	......	......	......	......	20	20	1
John Harvey & Co. Stirling No. 10,	......	1,908	......	......	1,908	......	......	48	11	......	......	19	20	1
Barker & McDill. Ivory Hill,	......	550	......	......	550	......	......	100	5	......	......	30	30	2
Greenwich Coal and Coke Co. Greenwich No. 1,	......	321.6	......	10	331.6	......	......	88½	22	......	......	7	10	1
S. V. Davis & Co. Flinton,	......	5,197	......	15	5,212	......	—	......	12	......	......	50	......	3
Oak Ridge Coal and Coke Co. Oak Ridge,	......	20,290	700	9,967	30,957	24,490	50	240	109	......	......	500	150	8
Cymbria Coal Co. Cymbria,	......	79,422.56	518	248	80,188.56	......	......	221	111	......	......	400	500	9
Black Lick Coal Mining Co. Black Lick,	......	55,999.15	1,380	324	57,703.15	......	......	137½	136	......	......	300	10	10
A. J. Black. Blacks,	......	27,185	......	600	27,785	......	......	265	57	......	......	84	1,500	5
Lincoln Coal Co. Lincoln,	......	9,661	......	10	9,671	......	......	101	25	......	......	52	50	6
Puritan Coal Mining Co. Puritan No. 4,	......	13,166	240	......	13,406	......	......	126	36	......	1	110	......	2

TABLE II—Continued.

Names of Operotars and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Saxton Furnace Co. Melrose,	......	35,836	......	259	36,095	......	......	296	100	......	......	200	......	11
Jackson & Walker. Black Diamond,	......	6,240	......	49	6,289	......	......	142	18	......	......	60	......	1
Bennington Coal and Coke Co. Bennington,	......	31,161	3,110	466	34,737	1,291	50	121.4	71	......	......	200	......	9
Grand total,	......	4,228,593.66	76,619.89	40,905.74	5,022,345	423,642	1,344	*188	9,177	8	22	32,670	22,459	842

*Average.

TABLE II—Continued.

Names of Operators.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Webster Coal and Coke Co.,		8	350	8	830	1,180	1		6	14	1,900	2	838	512	3	2
Beech Creek Coal and Coke Co.,		4	100	11	790	890			2	4	120	18	1,272	540	2	4
Clearfield and Cresson Coal and Coke Co.,				5	110	380	1			5	380	1	200	100		1
Barnes & Tucker,		7	735			735			1	4	650	4	500	300	3	1
Altoona Coal and Coke Co.,		4	160	2	200	360	1			4		2				2
Empire Coal Mining Co.,				3	260	260			1	2	130	3	35	30	1	1
Crescent Coal Mining Co.,				2	140	140				1	60	1	980	500		
John Langdon,																
Colonial Iron Co.,				3	145	225				4	230	2	600	400		
Morrisdale Coal Co.,				2	140	140				4	95	2	450	375		
Robertsdale Iron Co.,		10	300	7	540	840				2	310	5	4,600	2,100		1
W. H. Sweet,																
P. Geo. Hickes,																
Lackawanna Coal and Coke Co.,				3	325	325			2	5	325				3	
Allport Coal Co.,				2	200	200						1	150			1
Rembrandt Peale,		1	30													
Bradley & Meagher,																
Stirling Coal Co.,				4	600	600										1
E. Eichelberger & Co.,																
Walnut Coal Co.,																
Duncan & Spangler				6	540	540				3						2
Maderia Hill Coal Mining Co.,				2	160	160						2	150	50		1
Dunwiddie & Hirsh,				2	80	80				2	105					
Clearfield Bituminous Coal Corporation.																
West Branch,				3	260	260			1	2	170	2	70	50	1	2
Taylor & McCoy.																
Gallitzin shaft,		8	400			400				5	370				1	

TABLE II—Continued.

Names of Operators.	County.	Number of Boilers. Cylindrical.	Horse power.	Tubular.	Horse power.	Total horse power.	Locomotives. Steam.	Air.	Electric.	Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
Elmora Coal Co. Elmora Nos. 1 and 2,	......	......		......	......		......	......	......	......	......	......	......	......	......	2
Glen White Coal and Lumber Co. Glen White,	......	4	150	1	40	190	1	......	......	4	......	1	800	400	......	......
Great Eastern Seaboard Coal Co. Cambria No. 3,	......	......	......	3	200	200	......	......	......	1	100	1	800	400	1	......
E. R. Jackman & Co. Maucher,	......	1	35	......	......	35	......	......	......	......	......	......	......	......	......	......
Vinton Colliery Co. Vinton,	......	......	......	2	100	200	......	......	......	2	100	......		......	......	1
T. McGonigal. Patton No. 3,	......	......		......	......	......	......	......	......	......	......	1	200	200	......	......
Knight & Co. Alpha,	......	......		......	......	......	......	......	......	......	......	......	......	......	......	......
Deringer Bros. Susquehanna,	......	......		......	......	......	......	......	......	......	......	......	......	......	......	......
Joseph E. Thropp. Kearney,	......	......	......	3	300	300	......	......	1	1	175	1	160	80	1	1
Gates Bros. Fulton,	......	......	......	1	50	50	......	......	......	1	20	1	100	50	......	......
Rich Hill Coal Co. Rich Hill,	......	......	......	......	......	......	......	......	......	......	......	1	75	50	......	1

Spangler Coal and Coke Co. Gussie,				2	80	160						1	75	50		1
Daugherty Coal Co. Daugherty No. 2,																
Lambirth Coal Co. Warner,																
Kelly & Flanagan. Kelly No. 1,																
John Harvey & Co. Stirling No. 10,																
Barker & McDill. Ivory Hill,																
Greenwich Coal and Coke Co. Greenwich No. 1,																
S. V. Davis & Co. Flinton,																
Oak Ridge Coal and Coke Co. Oak Ridge,				3	50	150		1		2	100	1	100	100		1
Cymbria Coal Co. Cymbria,				1	150	150			2						1	
Black Lick Coal Mining Co. Black Lick,				3	180	180	1		2	2	275				1	1
A. J. Black. Black,																
Lincoln Coal Co. Lincoln,																
Puritan Coal Mining Co. Puritan No. 4,		1	100			100				1	75	1	600	200		
Saxton Furnace Co. Melrose,																
Jackson and Walker. Black Diamond,																
Bennington Coal and Coke Co. Bennington,		2	80	1	60	140				4	140	1	800	500		
Grand total,		60	2,444	85	6,530	9,570	5	2	32	79	5,810	44	13,280	6,937	18	26

TABLE III—Showing the number of each class of employes at each Colliery in the Tenth Bituminous District during the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	Grand total, inside and outside.
Webster Coal and Coke Co.																		
Webster Colliery No. 7,	Cambria,	1	......	146	......	13	4	12	176	1	3	3	2	......	1	7	17	193
Webster Colliery No. 9,	Cambria,	1	......	40	......	4	1	3	49	......	1	3	......	......	1	2	7	56
Webster Colliery No. 10,	Cambria,	1	......	190	......	26	13	41	271	1	7	5	7	75	3	20	118	389
Webster Colliery No. 11,	Blair,	1	......	80	......	7	1	12	101	......	1	......	1	32	1	3	38	139
Webster Colliery No. 12,	Cambria,	1	......	110	......	10	5	22	148	1	4	5	1	50	1	12	74	222
Webster Colliery No. 13,	Cambria,	1	......	60	......	4	1	2	68	......	......	......	......	......	......	......	......	68
Webster Colliery No. 14,	Cambria,	1	......	40	......	5	2	10	58	......	1	2	......	......	......	2	5	63
Total,	......	7	......	666	......	69	27	102	871	3	17	18	11	157	7	46	259	1,130
Beech Creek Coal and Coke Co.																		
Pardee No. 3,	Cambria,	1	......	100	......	10	8	44	163	......	2	3	......	......	6	5	16	179
Pardee No. 4,	Cambria,	2	......	100	......	6	5	47	160	......	2	3	......	......	......	3	8	168
Pardee No. 5,	Cambria,	1	......	50	......	5	4	26	86	......	1	3	......	......	......	3	7	93
Pardee No. 6,	Cambria,	1	......	40	......	5	2	26	74	......	......	......	......	......	......	2	2	76
Flanigan Run No. 8,	Cambria,	1	......	180	......	12	10	79	282	......	3	4	......	......	......	8	15	297
Flanigan Run No. 9,	Cambria,	1	......	40	......	4	1	7	53	......	1	......	......	......	......	2	3	56
Columbia No. 12,	Cambria,	1	......	120	......	8	5	48	182	......	2	2	......	......	......	5	9	191
Moshannon No. 13,	Cambria,	1	......	60	......	3	2	14	80	......	1	......	......	......	......	2	3	83
Ashcroft No. 14,	Cambria,	1	......	50	......	2	2	5	60	......	1	......	......	......	......	2	3	63
Total,	......	10	......	740	......	55	39	296	1,140	......	13	15	......	......	6	32	66	1,206

Cresson and Clearfield Coal and Coke Co.																		
Richland,	Cambria,	1	......	41	......	3	......	......	45	......	......	......	......	......	......	1	1	46
Dean No. 9,	Cambria,	......	......	50	......	4	......	1	55	......	......	......	......	......	......	......	......	55
Dean No. 8,	Cambria,	1	......	140	2	10	1	......	154	......	2	2	1	......	2	5	12	166
Dean No. 10,	Cambria,	1	......	76	1	5	1	1	85	......	1	2	1	......	......	4	8	93
Total,	......	3	......	307	3	22	2	2	339	......	3	4	2	......	2	10	21	360
Barnes and Tucker Coal Co.																		
Lancashire No. 6,	Cambria,	1	......	65	1	4	2	......	73	1	1	......	......	......	......	......	......	75
Lancashire No. 8,	Cambria,	1	......	105	16	6	4	......	132	1	1	2	1	......	2	3	2	142
Lancashire No. 7,	Cambria,	1	......	130	16	6	4	1	158	1	2	2	1	......	2	4	10	170
Lancashire No. 3,	Cambria,	1	......	50	11	2	2	1	67	1	1	1	......	......	......	......	12	70
Lancashire No. 4,	Cambria,	......	......	3	......	......	......	......	3	......	......	......	......	......	......	......	3	3
Lancashire No. 9,	Cambria,	1	......	20	......	1	......	......	22	......	......	......	......	......	......	......	......	22
Juniata,	Cambria,	1	......	40	......	1	......	......	42	1	......	......	......	......	......	......	1	43
Total,	......	6	......	413	44	20	12	2	497	5	5	5	2	......	4	7	28	525
Altoona Coal and Coke Co.																		
Delaney,	Cambria,	1	......	332	......	34	1	......	368	......	5	6	2	......	2	45	460	428
Horse Shoe,	Blair,	1	......	58	......	8	3	1	71	......	1	......	......	......	......	2	73	74
Total,	......	2	......	390	......	42	4	1	439	......	6	6	2	......	2	47	533	502
Empire Coal Mining Co.																		
Empire,	Cambria,	1	......	181	6	7	2	31	228	......	1	2	3	......	2	13	21	249
Eclipse,	Cambria,	1	......	20	3	......	......	1	24	......	......	1	......	......	......	1	2	26
Total,	......	2	......	200	9	7	2	32	252	......	1	3	3	......	2	14	23	275
Crescent Coal Mining Co.																		
Crescent No. 1,	Bedford,	1	......	89	......	10	4	2	106	......	1	1	......	......	2	5	9	115
Crescent No. 2,	Bedford,	1	......	81	......	7	2	4	95	......	2	......	1	......	......	5	8	103
Crescent No. 3,	Bedford,	1	......	41	......	3	1	2	48	......	1	......	......	......	......	2	3	51
Crescent No. 4,	Bedford,	......	......	4	......	......	......	......	4	......	......	......	......	......	......	......	......	4
Total,	......	3	......	215	......	20	7	8	253	......	4	1	1	......	2	12	20	273
John Langdon.																		
Cambria No. 1,	Bedford,	1	......	50	......	7	3	2	63	......	1	......	......	......	1	5	7	70
Chevington No. 1,	Bedford,	......	......	8	......	1	......	......	9	......	......	......	......	......	......	......	......	9
Chevington No. 2,	Bedford,	1	......	18	......	3	1	2	25	......	1	......	......	......	1	3	5	30
Total,	......	2	......	76	......	11	4	4	97	......	2	......	......	......	2	8	12	109
Colonial Iron Co.																		
Durham No. 1,	Bedford,	1	......	74	3	8	2	2	90	......	2	3	2	44	1	2	54	144
Durham No. 2,	Bedford,	1	......	80	2	8	3	1	95	......	2	2	......	7	1	2	14	109
Total,	......	2	......	154	5	16	5	3	185	......	4	5	2	51	2	4	68	253

TABLE III— Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total Inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Morrisdale Coal Co.																		
Cunard shaft,	Bedford,	1	......	64	......	6	1	3	75	......	2	3	......	8	2	4	19	94
Cunard slope,	Bedford,	......	......	23	......	2	1	2	28	......	......	......	......	......	......	......	......	28
Total,		1	......	87	......	8	2	5	103	......	2	3	......	8	2	4	19	122
Robertsdale Iron and Coal Co.																		
Robertsdale slope,	Huntingdon,	1	......	216	......	16	6	18	257	1	3	5	......	......	3	9	21	278
Robertsdale shaft,	Huntingdon,	1	......	97	......	6	3	9	116	......	2	7	......	......	......	16	15	131
Total,		2	......	313	......	22	9	27	373	1	5	12	......	......	3	25	36	409
W. H. Sweet.																		
Ocean No. 1,	Huntingdon,	1	......	15	2	......	......	3	21	......	1	......	......	......	......	......	1	22
Ocean No. 2,	Huntingdon,	1	......	35	4	......	......	2	42	......	1	......	......	......	......	......	1	43
Ocean No. 3,	Huntingdon,	1	......	35	3	......	......	3	42	......	1	......	......	......	......	......	1	43
Carbon,	Huntingdon,	1	......	41	4	......	......	6	52	......	1	......	......	......	......	......	1	53
Total,		4	......	126	13	......	......	14	157	......	4	......	......	......	......	......	4	161
P. Geo. Hickes.																		
Hickes Colliery No. 1,	Huntingdon,	1	......	25	......	3	......	......	29	1	1	......	......	......	1	......	3	32
Hickes Colliery No. 2,	Huntingdon,	......	......	16	......	1	......	......	17	......	......	......	......	......	......	......	......	17
Total,		1	......	41	......	4	......	......	46	1	1	......	......	......	1	......	3	49

Lackawanna Coal and Coke Co.																		
Lackawanna No. 1,	Cambria,	1	......	82	2	10	......	7	102	......	4	2	......	......	2	9	17	119
Lackawanna No. 2,	Cambria,	1	......	32	4	4	......	......	41	......	......	1	......	......	......	1	2	43
Total,	......	2	......	114	6	14	......	7	143	......	4	3	......	......	2	10	19	162
Allport Coal Co.																		
Allport No. 1,	Cambria,	2	......	100	......	5	2	2	111	1	1	2	1	......	1	1	....	118
Allport No. 2,	Cambria,	1	......	50	......	3	1	1	56	1	1	......	1	......	1	......	11	60
Total,	......	3	......	150	......	8	3	3	167	2	2	2	2	......	2	1	11	178
Rembrandt Peale.																		
Victor No. 2,	Cambria,	1	......	82	......	3	......	1	87	......	1	1	2	......	1	4	9	96
Victor No. 3,	Cambria,	1	......	11	......	1	......	......	13	......	......	......	......	......	......	1	1	14
Victor No. 4,	Cambria,	1	......	33	......	3	......	1	38	......	1	......	......	......	......	1	2	40
Total,	......	3	......	126	......	7	......	2	138	......	2	1	2	......	1	6	12	150
Stirling Coal Co.																		
Emma Nos. 3 and 5,	Cambria,	1	......	73	2	4	4	25	109	......	1	1	......	......	1	3	6	115
Stirling No. 1,	Cambria,	1	......	70	2	7	2	6	88	......	1	......	......	......	......	4	5	93
Total,	......	2	......	143	4	11	6	31	197	......	2	1	......	......	1	7	11	208
Bradley & Meagher.																		
Bradley No. 1,	Blair,	1	......	20	......	1	......	......	22	......	......	......	......	......	......	1	1	23
Bradley Nos. 2 and 3,	Blair,	1	......	40	......	7	2	......	50	......	1	......	......	......	2	1	4	54
Total,	......	2	......	60	......	8	2	......	72	......	1	......	......	......	2	2	5	77
Walnut Run Coal Co.																		
Walnut Run No. 1,	Cambria,	1	......	39	......	2	1	......	43	......	1	......	......	......	1	3	5	48
Walnut Run No. 2,	Cambria,	1	......	16	......	1	1	......	19	......	......	......	......	......	1	2	3	22
Total,	......	2	......	55	......	3	2	......	62	......	1	......	......	......	2	5	8	70
E. Eichelberger & Co.																		
Fisher,	Huntingdon.	1	......	28	......	4	......	1	34	......	......	......	......	......	1	......	1	35
Bacon,	Bedford,	1	......	25	......	3	1	......	30	......	......	......	......	......	1	......	1	31
Total,	......	2	......	53	......	7	1	1	64	......	......	......	......	......	2	......	2	66
Duncan & Spangler.																		
Blubaker No. 8,	Cambria,	1	......	100	6	6	5	......	118	......	3	3	......	......	3	6	15	133
Blubaker No. 11,	Cambria,	......	......	10	......	1	......	......	11	......	......	......	......	......	......	......	....	11
Blubaker No. 13,	Cambria,	1	......	40	1	2	1	2	47	......	......	......	......	......	......	......	....	46
Delta,	Cambria,	1	......	60	2	3	2	......	67	......	1	2	......	......	......	3	6	73
Total,	......	3	......	210	9	12	8	2	243	......	4	5	......	......	3	9	21	263

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Madeira Hill Coal Mining Co.																		
Manlon,	Cambria,	1	......	50	......	4	2	8	65	......	1	1	1	......	1	2	6	71
Spangler,	Cambria,	1	......	40	......	2	2	1	46	......	......	......	1	......	1	2	4	50
Total,	......	2	......	90	......	6	4	9	111	......	1	1	2	......	2	4	10	121
Dunwiddie & Hirsh.																		
Nant Y Glo No. 1,	Cambria,	1	......	62	......	3	2	2	70	1	1	1	......	......	1	2	6	76
Nant Y Glo No. 2,	Cambria,	1	......	11	......	1	......	......	13	......	......	......	......	......	......	1	1	14
Total,	......	2	......	73	......	4	2	2	83	1	1	1	......	......	1	3	7	90

Recapitulation.

Webster Coal and Coke Co.,	Cam. & Blair	7	......	666	......	69	27	102	871	3	17	18	11	157	7	46	259	1,130
Beech Creek Coal and Coke Co.,	Cambria,	10	......	740	......	55	39	296	1,140	......	13	15	......	......	6	32	66	1,206
Cresson and Clearfield Coal and Coke Co.,	Cambria,	3	......	307	3	22	2	2	339	......	3	4	2	......	2	10	21	360
Barnes and Tucker Coal Co.,	Cambria,	6	......	413	44	20	12	2	497	5	5	5	2	......	4	7	28	525
Altoona Coal and Coke Co.,	Cam. & Blair	2	......	390	......	42	4	1	439	......	6	6	2	......	2	47	63	502
Empire Coal Mining Co.,	Cambria,	2	......	200	9	7	2	32	252	......	1	3	3	......	2	14	23	275
Crescent Coal Mining Co.,	Bedford,	3	......	215	......	20	7	8	253	......	4	1	1	......	2	12	20	273
John Langdon,	Bedford,	2	......	76	......	11	4	4	97	......	2	......	......	......	2	8	12	109

Colonial Iron Co.,	Bedford,	2	......	154	5	16	5	3	185	......	4	5	2	51	2	4	68	253
Morrisdale Coal Co.,	Bedford,	1	......	87	......	8	2	5	103	......	2	3	......	8	2	4	19	122
Robertsdale Iron and Coal Co.,	Huntingdon,	2	......	313	......	22	9	27	373	1	5	12	......	......	3	15	36	409
W. H. Sweet,	Huntingdon,	4	......	126	13	......	......	14	157	......	4	......	......	......	......	......	4	161
P. Geo. Hickes,	Huntingdon,	1	......	41	......	4	......	......	46	1	1	......	......	......	1	......	3	49
Lackawanna Coal and Coke Co.,	Cambria,	2	......	114	6	14	......	7	143	......	4	3	......	......	2	10	19	162
Allport Coal Co.,	Cambria,	3	......	150	......	8	3	3	167	2	2	2	2	......	2	1	11	178
Rembrandt Peale,	Cambria,	3	......	126	......	7	......	2	138	......	2	1	2	......	1	6	12	150
Stirling Coal Co.,	Cambria,	2	......	143	4	11	6	31	197	......	2	1	......	......	1	7	11	208
Bradley & Meagher,	Blair,	2	......	60	......	8	2	......	72	......	1	......	......	......	2	2	5	77
Walnut Run Coal Co.,	Cambria,	2	......	55	......	3	2	......	62	......	1	......	......	......	2	5	8	70
E. Eichelberger & Co.,	Hun. & Bed.	2	......	53	......	7	1	1	64	......	......	......	......	......	1	......	1	66
Duncan & Spangler,	Cambria,	3	......	210	9	12	8	2	243	......	4	5	......	......	3	9	21	264
Madeira Hill Coal Mining Co.,	Cambria,	2	......	90	......	6	4	9	111	......	1	1	2	......	2	4	10	121
Dunwiddie & Hirsh,	Cambria,	2	......	73	......	4	2	2	83	1	1	1	......	......	1	3	7	90

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Clearfield Bituminous Coal Corporation. West Branch,	Cambria,	1	2	183	14	16	2	32	250	......	1	3	6	......	1	16	27	277
Taylor & McCoy. Gallitzin hsaft,	....	2	......	182	......	20	8	31	243	......	1	3	7	56	3	2	72	315
Elmora Coal Co. Elmora Nos. 1 and 2,	Cambria,	1	......	80	2	6	2	4	95	......	1	......	......	......	......	2	3	98
Glen White Coal and Lumber Co. Glen White,	Blair,	1	......	85	4	8	3	4	105	1	1	4	......	......	3	33	42	147
Great Eastern Seaboard Coal Co. Cambria No. 3,	Bedford,	1	......	66	......	10	2	3	82	......	......	2	......	......	1	2	5	87
E. R. Jackman & Co. Maucher,	Cambria,	1	......	91	......	3	1	5	101	......	1	1	1	......	......	......	3	104
Vinton Colliery Co. Vinton,	Cambria,	1	......	34	......	5	......	91	131	......	2	2	......	......	2	8	14	145
J. J. McGonigal. Patton No. 3,	Cambria,	1	......	31	......	2	......	......	34	......	1	......	......	......	1	......	2	36

Knight & Co. Alpha,	Cambria,	1	......	30	......	1	1	2	35	......	......	......	......	......	1	......	1	36
Deringer Bros. Susquehanna,	Cambria,	1	......	40	......	2	......	......	43	......	......	......	......	......	1	1	2	45
Joseph E. Thropp, Kearney,	Bedford,	1	......	105	2	15	7	10	140	......	2	2	......	78	2	4	88	220
Gates Bros. Fulton,	Bedford,	1	......	30	1	3	2	4	41	......	1	1	......	......	1	1	4	45
Rich Hill Coal Co. Rich Hill,	Cambria,	1	......	25	......	2	......	1	29	......	......	......	1	......	......	......	1	30
Spangler Coal and Coke Co. Gussie,	Cambria,	1	......	30	1	1	......	......	33	1	......	1	......	......	1	1	4	37
Daugherty Coal Co. Daugherty No. 2,	Cambria,	1	......	10	......	1	......	......	12	......	......	......	......	......	1	......	1	13
Lambirth Coal Co. Warner,	Bedford,	1	......	40	......	6	1	......	48	......	2	......	......	......	3	......	5	53
Kelley & Flanagan. Kelley No. 1,	Cambria,	1	......	8	......	1	......	......	10	......	......	......	......	......	1	2	3	13
John Harvey & Co. Stirling No. 10,	......	......	......	9	......	1	......	......	10	1	......	......	......	......	......	......	1	11
Greenwich Coal and Coke Co. Greenwich No. 1,	......	1	......	18	......	1	......	......	20	......	......	......	......	......	2	......	2	22
Barker & McDill. Ivory Hill,	......	......	......	......	......	......	......	5	5	......	......	......	......	......	......	......	......	5
S. V. Davis & Co. Flinton,	Cambria,	1	......	7	1	2	......	......	11	......	......	......	......	......	1	......	1	12
Oak Ridge Coal and Coke Co. Oak Ridge,	Cambria,	1	......	71	3	6	3	......	84	1	2	2	1	......	2	17	25	109
Cymbria Coal Co. Cymbria,	Cambria,	1	......	94	......	3	2	2	102	......	2	2	1	......	2	2	9	111
Black Lick Mining Co. Big Bend,	Cambria,	1	......	105	......	5	3	4	118	1	3	4	1	......	2	1	12	130
A. J. Black. Blacks,	Huntingdon,	1	......	46	......	4	1	1	53	1	1	......	......	......	1	1	4	57
Lincoln Coal Co. Lincoln,	Cambria,	1	......	18	1	2	1	......	23	......	......	......	......	......	1	1	2	25

TABLE III—Continued.

Names of Operators and Collieries.	Countv	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total, inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Puritan Coal Mining Co. Puritan No. 4,	Cambria,	1	......	25	3	1	1	1	32	......	1	1	......	......	1	1	4	36
Saxton Furnace Co. Melrose,	Huntingdon,	2	......	73	......	8	4	11	98	......	1	......	1	......	......	......	2	100
Jackson & Walker. Black Diamond,	Cambria,	1	......	15	......	1	......	......	17	......	......	......	......	......	1	......	1	18
Bennington Coal and Coke Co. Bennington,	Blair,	1	......	50	......	5	1	3	60	......	2	3	......	......	1	5	11	71
Grand total,		98	2	6,369	159	517	186	767	8,098	19	110	117	48	350	88	347	1,079	9,177

TABLE III—' Continued.

Names of Operators and Collieries.	County.	Number of Days Worked in Each Month.											
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Webster Coal and Coke Co.,	Cambria and Blair,	18.8	14.5	18.4	19.2	19	16	16	19	18.3	21.5	20	21.8
Beech Creek Coal and Coke Co.,	Cambria,	13.5	10.5	16.5	15	11.5	15	16.2	15.2	17	16.3	16.3	15.5
Cresson and Clearfield Coal and Coke Co.,	Cambria,	16	12.2	16	15	13.5	10	11	11	13	11	13	13
Barnes and Tucker Coal Co.,	Cambria,	18	14	15.5	14.6	16.4	15	17	14.4	17.4	16.6	15.3	16.5
Altoona Coal and Coke Co.,	Cambria and Blair,	19	20.5	24.5	20.5	20	19.5	19.5	19.5	19.5	26.5	25	24.5
Empire Coal Mining Co.,	Cambria,	24	21.5	22.5	23.5	19.5	19.5	13	12	9.5	15.5	23.5	14
Crescent Coal Mining Co.,	Bedford,	25	23.3	25	17	15	18	14	21	22	22	23	21
John Langdon,	Bedford,	20	19	21	12	18	19.5	15	23	23	26	25	24
Colonial Iron Co.,	Bedford,	17.5	26	25	25	26	25	26	24	26	17.5	25	25
Morrisdale Coal Co.,	Bedford,	....	9.5	24	23.5	21	18	24	24.5	21	21.5	23	23
Robertsdale Iron and Coal Co.,	Huntingdon,	15	16.5	24.5	1	....	2	22	13.5	17.5	26.5	25.5	21
W. H. Sweet,	Huntingdon,	23	19	22	20	21	19	20	21	18	25	22	23
P. Geo. Hickes,	Huntingdon,	24	12	17	21	10.5	21	12	24	22	21	23	24
Lackawanna Coal and Coke Co.,	Cambria,	18	18	19	21	12	18	22	24	22	20	15	17
Allport Coal Co.,	Cambria,	18	17	13.5	19	19.5	13	14.5	14	16	18	16	17
Rembrandt Peale,	Cambria,	17.5	12.5	24.5	21	19.5	15.5	20.5	16	8.5	16	17.5	15
Stirling Coal Co.,	Cambria,	16	21	25	22	21	25	17	25	22	21.5	23.5	20
Bradley & Meagher,	Blair,	12	7	17	12	6	11	7	10	12	13	18	28
Walnut Run Coal Co.,	Cambria,	2	12	15	18	16	14	15	19	16	17	18	18
E. Eichelberger & Co.,	Hun. and Bedford,	26.5	22.5	23.5	21.5	23.5	21.5	21.5	22	25	23.5	26	24.5
Duncan & Spangler,	Cambria,	18	12	10	9	6	7	5	9	7	8.5	10	11
Madeira Hill Coal Mining Co.,	Cambria,	15	4.5	22	15.5	6.5	6	4.5	12	10	11	12	12
Dunwiddie & Hirsh,	Cambria,	9	8	11.5	9	13	11	6	9	10.5	8.5	8	12
Clearfield Bituminous Coal Corporation.													
West Branch,	Cambria,	23	19	20	23	22	17	17	10	10	18	15	21
Taylor & McCoy.													
Gallitzin shaft,	Cambria,	20.3	14.3	19.2	16.9	18.9	20.4	19.1	20.3	21.8	17.9	20.2	20.5
Elmora Coal Co.													
Elmora Nos. 1 and 2,	Cambria,	19	22	24	23	23	25	21	24	18	23	19	17
Glen White Coal and Lumber Co.													
Glen White,	Blair,	21	19	21	20	20	21	22	21	19	20	21	22

TABLE III—Continued.

Names of Operators and Collieries.	County.	Number of Days Worked in Each Month.											
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Great Eastern Seaboard Coal Co. Cambria No. 3,	Bedford,	16	12	16	4	3	15	3	....	....	8	20	22
E. R. Jackman & Co. Maucher,	Cambria,	19	13	23	17	21	19	15	17	14	15	20	12
Vinton Colliery Co. Vinton,	Cambria,	24	22	24	22	26	24	24	23	14	24	24	20
J. J. McGonigal. Patton No. 3,	Cambria,	18	15	15	20	13	....	6	10	12	14	15	13
Knight & Co. Alpha,	Cambria,	2	12	19	14	8	18	9	12	15	14	12	15
Deringer Bros. Susquehanna,	Cambria,	18	15	20	19½	18	16½	9	4	10	9	17	15
Joseph E. Thropp. Kearney,	Bedford,	25	24	26	26	6	....	....	....	....	....	....	23
Gates Brothers. Fulton,	Bedford,	24	22	24	24	22	21	20	19	20	20	24	24
Rich Hill Coal Co. Rich Hill,	Cambria,	....	....	....	15	17	14	13	14	7½	7	7	13
Spangler Coal and Coke Co. Gussie,	Cambria,	14	13	20	14	4	7	2	6	12	14	21	23
Daugherty Coal Co. Daugherty No. 2,	Cambria,	23	12	22	17	12	16	17	20	16	26	20	18

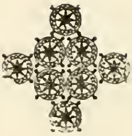
Lambirth Coal Co. Warner,	Bedford,	....	....	....	....	....	....	....	....	....	20	13	21
Kelley & Flanagan. Kelley No. 1,	Cambria,	....	....	....	....	....	....	....	....	....	....	....	....
John Harvey & Co. Stirling No. 10,	....	....	....	....	....	....	....	....	....	....	13	21	14
Greenwich Coal and Coke Co. Greenwich No. 1,	....	....	....	....	....	....	....	....	....	....	....	....	8½
Barker & McDill. Ivory Hill,	....	....	....	....	....	....	....	....	....	....	....	....	....
S. V. Davis & Co. Flinton,	Cambria,	....	....	....	....	....	....	....	....	....	....	....	....
Oak Ridge Coal and Coke Co. Oak Ridge,	Cambria,	23	24	26	20	16	16	11	18	17	23	22	24
Cymbria Coal Co. Cymbria,	Cambria,	18	17	20	17	17	16	21	19	19	18	17	22
Black Lick Mining Co. Big Bend,	Cambria,	13	10	12	14	9	12	8½	11½	14	12	8½	13
A. J. Black. Blacks,	Huntingdon,	23	21	24	26	22	21	22	21½	21	22	20	21½
Lincoln Coal Co. Lincoln,	Cambria,	....	....	....	....	11	21	15	15	8	9	13	9
Puritan Coal Mining Co. Puritan No. 4,	Cambria,	13	17	7	12	6	10	8	9	13	7	9	15
Saxton Furnace Co. Melrose,	Huntingdon,	25	23	25	25	25	26	26	27	23	22	25	24
Jackson & Walker. Black Diamond,	Cambria,	12	14	15	14	8	15	6	6	10	13	13	16
Bennington Coal and Coke Co. Bennington,	Blair,	16.5	14.1	11.3	17.6	62	5.6	7	4.5	4.6	8.9	6.2	18.9

TABLE IV—List of fatal accidents that occurred in and about the mines of the Tenth Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	5	Martin Fura,	Hungarian,	Miner,	39	M.	1	1	Glen White,	Blair,	Killed by a fall of coal. This man fired a shot in the coal and he lay down under the loose end to mine it deeper. He was warned by his companion, but he paid no attention.
	11	John Koran,	Slav,	Miner,	38	M.	1	....	Vinton No. 1,	Cambria,	Fatally injured by fall of coal.
May	20	Nickel Vancoski,	Pole,	Miner,	59	M.	1	1	Brawley,	Cambria,	Killed by a stone falling upon him.
June	14	John Lowrie,	American,	Miner,	23	S.	....	....	Ocean No. 2,	Huntingdon,	Killed by the explosion of a stick of dynamite. John Lowrie and his brother had charged a shot in the bottom rock before leaving the mine on the 13th; they put one stick of dynamite and 17 inches of powder in the hole. Next morning they cleaned up the rock and finding a piece of rock over the back of the hole, they placed two steel wedges in the hole and sledged them in, when the stick of dynamite which had not exploded with the powder, exploded, nearly blowing John Lowrie's head off.
	25	Clinton J. Jordan,	American,	Machine runner	34	M.	1	2	Lackawanna No. 1,	Cambria,	Killed by electricity. The current charged the machine while he was setting the jack in the roof.
Aug.	23	Joseph Colena,	Pole,	Miner,	29	M.	1	....	Maucher,	Cambria,	Fatally injured by fall of roof.
Sept.	7	John Walsh,	Hungarian,	Cager,	19	S.	....	....	Taylor & McCoy,	Cambria,	Killed by the cage coming down on him while he was engaged with others cleaning the sump.
Dec.	16	Andrew Feigel,	Slav,	Miner,	28	M.	1	3	Ashcroft,	Cambria,	Killed by a fall of coal. He had failed to sprag the coal. His attention was called to the danger, but he said it never had fallen, and would not fall on him.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Tenth Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	10	Eugene Bradley,	American,	Miner,	41	S.	Maucher,	Cambria,	Concussion of the spine and ankle broken by a fall of roof.
	14	John Whiteman,	German,	Miner,	45	M.	Pardee No. 4,	Cambria,	Injured by cars.
	17	Bop Tredgek,	Italian,	Miner,	29	S.	Delaney,	Cambria,	Burned by a blown out shot.
	17	Maurice Paterina,	Italian,	Miner,	36	M.	Delaney,	Cambria,	Burned by a blown out shot.
	24	Wright Coop,	English,	Miner,	35	M.	Empire,	Cambria,	Fall of coal.
Feb.	28	S. E. Everhart,	American,	Pumpman,	45	M.	Woodvale shaft,	Huntingdon,	Injured by falling 12 feet; he stepped off the landing, dislocating his hip.
March	5	Frank Wright,	English,	Miner,	51	S.	Woodvale shaft,	Huntingdon,	Three ribs broken by a prop falling on him.
	14	Blair Rutlege,	American,	Driver,	20	S.	Maucher,	Cambria,	Knee cap injured by a lever while putting a car on the track.
	19	Luke Elder,	American,	Miner,	50	M.	Delaney,	Cambria,	Injured about the body by cars.
	26	John Leichty,	American,	Driver,	28	S.	Woodvale shaft,	Huntingdon,	Arm broken by fall of coal.
April	23	Harry Watson,	American,	Civil engineer,	25	S.	Stirling No. 8,	Cambria,	Leg broken; caught between car and rib.
May	6	Thos. Willets,	English,	Miner,	34	M.	Empire,	Cambria,	Fractured rib by fall of roof.
July	12	Willie Buscott,	Lithuanian,	Miner,	15	....	Puritan No. 4,	Cambria,	Injured by fall of rock.
Aug.	2	John Shenetki,	Hungarian,	Car runner,	22	S.	Vinton No. 2,	Cambria,	Four ribs broken by cars.
	29	Axel Swanson,	American,	Miner,	13	....	Flanagan No. 8,	Cambria,	Foot crushed, necessitating amputation, by coal rolling upon him.
Sept.	30	Arthur Hockingburg,	American,	Miner,	23	....	Woodvale shaft,	Huntingdon,	Back seriously injured by fall of rock and coal.
Oct.	15	John Prouski,	Pole,	Miner,	37	M.	Flanagan No. 6,	Cambria,	Leg broken by fall of coal.
	16	John Fosock,	Hungarian,	Miner,	36	M.	Flanagan No. 8,	Cambria,	Fracture of leg by coal rolling on him.
	24	Jos. Bulerbaug,	American,	Brakeman,	32	M.	Webster No. 7,	Cambria,	Leg broken by a motor.
Dec.	9	Bruce Lane,	American,	Driver,	31	M.	Robertsdale,	Huntingdon.	Seriously injured; fell under cars.
	13	John Polinski,	Pole,	Miner,	45	M.	Robertsdale,	Huntingdon,	Injured by fall of roof.



Eleventh Bituminous District.

WESTMORELAND, FAYETTE AND ALLEGHENY COUNTIES.

Scottdale, Pa., March 17, 1902.

Hon. James W. Latta, Secretary of Internal Affairs:

Sir: In compliance with the provision of the act of Assembly, approved May 15, 1893, relating to the Bituminous coal mines of Pennsylvania. I herewith submit my first annual report as Inspector of Mines for the Eleventh Bituminous Coal District for the year ending December 31, 1901.

It contains the usual statistical tables, together with a brief description of the mines, their condition and the improvements made during the year, which is very satisfactory with but few exceptions, and in such cases when I have had cause to complain, I am pleased to state that I have found the operators very willing to correct the evils.

There is also a description of the fatal accidents numbering forty-five. I very much regret to report such an exceedingly great number; there are fifty-three non-fatal ones, together with a summary of the statistics contained in the tables. All of which is respectfully submitted.

W. J. MOLLISON,
Inspector.

Summary of Statistics 1901.

Number of mines in the district,	63
Number of mines exhausted and abandoned during the year,	2
Number of new mines opened during the year,	3
Number of persons employed inside,	6,581
Number of persons employed outside,	628
Total number of persons employed in production of coal,	7,309
Total number of persons employed in manufacture of coke,	3,446
Total number of employes,	10,755
Number of tons of coal produced,	8,172,143

Number of tons used in the manufacture of coke, ...	6,470,595
Number of tons shipped, ...	1,476,477
Number of tons used at mines for steam and heat, ..	139,518
Number of tons sold to employes and others, ...	85,553
Average number of tons produced per life lost, ...	190,050
Average number of tons of coal produced per employee, ...	1,118
Number of fatal accidents in production of coal, ...	43
Number of non-fatal accidents, ...	53
Average number of tons produced per non-fatal accident, ...	154,199
Total number of accidents in production of coal, ...	96
Average number of tons produced per accident, ...	85,126.58
Average number of persons employed per fatal accident in the production of coal, ...	250
Average number of persons employed per non-fatal accident, ...	203
Number of wives made widows by accidents, ...	35
Number of orphans by accidents, ...	70
Number of coke ovens in the district, ...	8,778
Number of tons of coke produced, ...	4,360,559
Number of fatal accidents in production of coke, ...	2
Average number of tons of coke produced per life lost, ...	2,180,279.50
Average number of persons employed per life lost,..	1,724
Number of kegs of powder used, ...	13,790
Number pounds of dynamite used, ...	8,783
Number of animals used in and about the mines, ...	1,165

TABLE A—Total Production of Coal, the Number of Persons Employed by Each Company During the Year 1901, and the Average Number of Tons Produced Per Each Employe.

	Number of tons produced.	Number of persons employed.	Number of tons produced per employe.
H. C. Frick Coke Co.,	4,023,244	3,340	1,204.54
Pittsburg Coal Co.,	1,007,888	1,229	820.08
South West Connellsville Coke Co.,	1,241,364	870	1,426.85
Hecla Coke Co.,	616,912	481	1,282.56
Continental Coke Co.,	338,552	297	1,139.91
Bessemer Coke Co.,	197,485	144	1,371.42
W. J. Rainey,	177,234	156	1,136.11
Painter & Fogg,	22,172	38	583.48
Penn Gas Coal Co.,	89,639	108	829.99
Cochran Bros.,	39,119	39	1,003.05
Laughlin & Co., Limited,	9,534	16	595.87
B. F. Keister & Co.,	31,628	25	1,265.12
Pennsville Coke Co.,	57,008	46	1,221.91
American Sheet Steel Co.,	36,388	27	1,347.70
J. R. Stauffer & Co.,	20,049	15	1,336.60
Mt. Pleasant Coke Co.,	13,433	67	200.66
J. W. Shields,	163,303	198	824.76
Bowman Bros.,	16,800	30	560.00
Amyville, Youghiogheny Gas Coal Co.,	47,437	70	677.67
J. W. Overholt,	22,954	10	2,295.40
Total and average,	8,172,143	7,206	1,134.07

TABLE B—Total Production of Coke, Number of Persons Employed in its Manufacture by Each Company During the Year 1901, and the Average Number of Tons Produced per Employe.

	Number of tons produced.	Number of persons employed.	Number of tons produced per employe.
H. C. Frick Coke Co.,	2,524,203	2,095	1,204.87
Pittsburg Coal Co.,	19,977	25	799.08
South West Connellsville Coke Co.,	774,050	586	1,320.90
Hecla Coke Co.,	437,597	258	1,696.10
Continental Coke Co.,	220,328	134	1,644.20
Bessemer Coke Co.,	110,125	105	1,048.81
W. J. Rainey,	116,377	68	1,711.42
Painter & Fogg,	16,625	24	692.70
Cochran Bros.,	29,196	20	1,459.80
Laughlin & Co., Limited,	6,176	5	1,235.20
B. F. Keister & Co.,	22,425	15	1,495.00
Pennsville Coke Co.,	42,705	33	1,294.00
J. R. Stauffer & Co.,	15,324	9	1,702.60
Mt. Pleasant Coke Co.,	8,742	63	138.70
J. W. Overholt,	16,709	8	2,088.60
Total and average,	4,360,559	3,448	1,264.65

TABLE C—Number of Fatal Accidents and Tons of Coal Produced per Life Lost, the Number of Non-Fatal Accidents and Number of Tons Produced per Non-Fatal. Total Number of Accidents and Number of Tons Produced per Accident.

	Number of fatal accidents.	Number of tons produced per life lost.	Number of non-fatal accident.	Number of tons produced per non-fatal accident.	Total number of accidents.	Number of tons produced per accident.
H. C. Frick Coke Co.,	16	251,452.75	21	191,583.05	37	108,736.32
Pittsburg Coal Co.,	20	50,394.40	19	53,046.79	39	25,843.28
S. W. C. C. Co.,	2	620,682.00	6	206,894.00	8	155,170.50
Hecla Coke Co.,	1	616,912.00	......	616,912.00	1	616,912.00
Continental Coke Co.,	2	169,276.00	1	338,552.00	3	112,850.66
Bessemer Coke Co.,	......	197,485.00	1	197,485.00	1	197,485.00
W. J. Rainey,	......	177,234.00	......	177,234.00	......	177,234.00
Painter & Fogg,	......	22,172.00	......	22,172.00	......	22,172.00
Penn Gas Coal Co.,	1	89.639.00	2	44,819.50	3	29,879.66
Cochran Bros.,	......	39,119.00	......	39,119.00	......	39,119.00
Laughlin & Co., Limited,	......	9,534.00	......	9,534.00	......	9,534.00
B. F. Keister & Co.,	......	31,628.00	1	31,628.00	1	31,628.00
Pennsville Coke Co.,	......	57,008.00	......	57,008.00	......	57,008.00
American Sheet Steel Co.,	......	36,388.00	1	36,388.00	1	36,388.00
Mt. Pleasant Coke Co.,	......	13,433.00	......	13,433.00	......	13,433.00
J. R. Stauffer & Co.,	......	20,049.00	......	20,049.00	......	20,049.00
J. W. Shields,	1	163,303.00	......	163,303.00	1	163,303.00
Bowman Bros.,	......	16,800.00	......	16,800.00	......	16,800.00
Amyville Gas Coal Co.,	......	47,437.00	1	47,437.00	1	47,437.00
J. W. Overholt,	......	22,954.00	......	22,954.00	......	22,954.00
Grand total and average,	43	190,049.83	53	154,191.37	96	85,126.49

TABLE D—Number of Fatal Accidents That Occurred in the Manufacture of Coke, Number of Tons Produced per Life Lost, Number of Tons per Accident Fatal and Non-Fatal.

	Number of fatal accidents.	Number of tons of coke produced per life lost.	Number of non-fatal accidents.	Number of tons of coke produced per non-fatal accident.	Total number of accidents.	Number of tons of coke produced per accident.
H. C. Frick Coke Co.,	2	1,262,101.5	......	2,524,203.0	2	1,262,101.5
Pittsburg Coal Co.,	......	19,977	......	19,977	......	19,977
S. W. C. C. Co.,	......	774,050	......	774,050	......	774,050
Hecla Coke Co.,	......	437,597	......	437,597	......	437,597
Continental Coke Co.,	......	220,328	......	220,328	......	220,328
Bessemer Coke Co.,	......	110,125	......	110,125	......	110,125
W. J. Rainey,	......	116,377	......	116,377	......	116,377
Painter & Fogg,	......	16,625	......	16,625	......	16,625
Cochran Bros.,	......	29,196	......	29,196	......	29,196
Laughlin & Co., Limited,	......	6,176	......	6,176	......	6.176
B. F. Keister & Co.,	......	22,425	......	22,425	......	22,425
Pennsville Coke Co.,	......	42,705	......	42,705	......	42,705
J. R. Stauffer & Co.,	......	15,324	......	15.324	......	15,324
Mt. Pleasant Coke Co.,	......	8,742	......	8,742	......	8,742
J. W. Overholt,	......	16,709	......	16,709	......	16,709
Grand total and average,	2	2,180,279.50	......	....	2	2,180,279.50

TABLE E—Nationality of Persons Killed and Injured.

	American.	English.	Welsh.	Scotch.	Irish.	German.	Pole.	Slav.	Austrian.	Hungarian.	Italian.	French.	Bohemian.	Russian.	Total.
Fatal,	13	3	1	2	1	2	4	8	2	1	4	1	2	1	45
Non-fatal,	13	1	....	1	1	6	10	8	7	....	5	....	1	....	53
Total,	26	4	1	3	2	8	14	16	9	1	9	1	3	1	98

TABLE F—Occupations of Persons Killed and Injured.

	Mine superintendent.	Assistant mine superintendent.	Mine foreman.	Asst. mine foreman.	Machine boss.	Machine runner.	Boss driver.	Miner.	Driver.	Pipeman.	Timberman.	Roadman.	Trip rider.	Coal loader.	Laborer.	Oven charger.	Coke drawer.	Total.
Fatal,	1	1	4	1	1	1	1	20	3	1	....	4	1	2	2	1	1	45
Non-fatal,	....	....	....	....	....	1	....	29	13	....	1	....	....	5	4	....	....	53
Total,	1	1	4	1	1	2	1	49	16	1	1	4	1	7	6	1	1	98

TABLE G—Classification of Accidents.

	Mine cars.	Explosion of fire damp.	Falls of roof.	Falls of slate.	Falls of coal.	Falls of coal and slate.	Explosion of coal dust.	Struck by a post.	Electric shock.	Kicked by mule.	Knocked down by hand truck.	Caught by cage.	Fell down shaft.	Fell on dinner bucket.	Fell down against car.	Struck by charging engine.	Run over by larries.	Total.
Fatal,	6	19	12	1	....	2	1	....	1	....	....	....	....	1	....	1	1	45
Non-fatal,	20	....	6	16	3	....	1	2	....	1	1	1	1	....	1	....	....	53
Total,	26	19	18	17	3	2	2	2	1	1	1	1	1	1	1	1	1	98

Table giving name of mine, kind of opening, system of mining and haulage, type and number of mining machines in use, and motive power for same.

Name of Mine.	Kind of opening.	System of Mining.	System of Haulage.	Type of Machine.				Motive power.
				Jeffry.	Morgan & Gardner.	General Electric.	Harrison.	
Eureka,	Drift,	Pick and machine,	Animal and rope,		3			Electricity.
Euclid,	Shaft,	Pick and machine,	Animal and electric motor,	5				Electricity.
Port Royal No. 1,	Shaft,	Pick and machine,	Animal and electric motor,	2				Compressed air.
Port Royal No. 2,	Shaft,	Pick and machine,	Animal and air motor,	3			4	Compressed air.
Waverly,	Shaft,	Pick and machine,	Animal and rope,		3			Electricity.
Big Chief,	Drift,	Pick and machine,	Animal and rope,	3				Electricity.
Ocean No. 1,	Drift,	Pick and machine,	Animal and electric motor,	4				Electricity.
Osceola,	Drift,	Pick and machine,	Animal and rope,		4			Electricity.
Guffey,	Drift,	Pick and machine,	Animal and electric motor,	3				Electricity.
Shaner,	Slope,	Pick and machine,	Animal and electric motor,	3				Electricity.
Yough slope,	Slope,	Pick and machine,	Animal and rope,			3		Electricity.
Ayers Hollow,	Drift,	Pick only,	Animal and rope.					
Amyville,	Drift,	Pick only,	Animal.					
Bowman,	Drift,	Pick only,	Animal.					
Penn Gas No. 4,	Drift,	Pick only,	Animal and rope.					
Alverton No. 1,	Slope,	Pick only,	Animal and rope.					
Alverton No. 2,	Drift,	Pick only,	Animal.					
Bessemer Nos. 1 and 2,	Drift,	Pick only,	Animal and rope.					
Buckeye,	Drift,	Pick only,	Animal and rope.					
Calumet,	Shaft,	Pick only,	Animal and rope.					
Central,	Shaft,	Pick only,	Animal and rope.					
Diamond,	Drift,	Pick only,	Animal.					
Enterprise,	Drift,	Pick only,	Animal.					
Pintown,	Drift,	Pick only,	Animal and rope.					
Neutral No. 2,	Drift,	Pick only,	Animal.					
Neutral No. 3,	Drift,	Pick only,	Animal and rope.					
Neutral No. 4,	Drift,	Pick only	Animal.					
Mammoth shaft,	Shaft,	Pick only,	Animal and rope.					
Mammoth slope,	Slope,	Pick only,	Animal and rope.					
Mullin,	Drift,	Pick only,	Animal and rope.					
Painter,	Drift,	Pick only,	Animal and rope.					

Rist,	Slope,	Pick only,	Animal and rope.					
Ruff,	Drift,	Pick only,	Animal and rope.					
Standard shaft,	Shaft,	Pick only,	Animal and rope.					
Standard slope,	Slope,	Pick only,	Animal and rope.					
Sunrise,	Drift,	Pick only,	Animal.					
Summit,	Drift,	Pick only,	Animal.					
Tip Top,	Drift,	Pick only,	Animal.					
United,	Shaft,	Pick only,	Animal and air motor.					
Valley,	Drift,	Pick only,	Animal and rope.					
White,	Drift,	Pick only,	Animal.					
South West No. 1, A,	Shaft,	Pick only,	Animal and rope.					
South West No. 2, B,	Shaft,	Pick only,	Animal and rope.					
South West No. 2,	Slope,	Pick only,	Animal.					
South West No. 3,	Drift,	Pick only,	Animal and rope.					
South West No. 4,	Drift,	Pick only,	Animal and rope.					
Hecla No. 1,	Shaft,	Pick only,	Animal.					
Hecla No. 2,	Shaft,	Pick only,	Animal.					
Marguerite No. 1,	Drift,	Pick only,	Animal and rope.					
Marguerite No. 2,	Slope,	Pick only,	Animal and rope.					
Empire,	Drift,	Pick only,	Animal.					
Humphrey,	Drift,	Pick only,	Animal.					
Acme,	Shaft,	Pick only,	Animal.					
Union,	Drift,	Pick only,	Animal.					
Clare,	Drift,	Pick only,	Animal.					
Hester,	Drift,	Pick only,	Animal.					
Spring Grove,	Drift,	Pick only,	Animal.					
Tyrone,	Drift,	Pick only,	Animal.					
Franklin,	Drift,	Pick only,	Animal.					
Pennsville,	Drift,	Pick only,	Animal and rope.					
Scottdale,	Drift,	Pick only,	Animal.					
Dexter,	Drift,	Pick only,	Animal.					
Boyer,	Drift,	Pick only,	Animal.					
Emma,	Drift,	Pick only,	Animal.					
Total,				23	10	3	4	

Table giving names of operators, names of collieries, kind of opening, method of ventilation, type of ventilator, size of ventilator, number of revolutions, capacity of ventilator, number of persons in mine, average quantity of air per person, number of splits, number of persons in each split, average quantity of air per person in each split.

Names of Operators.	Names of Collieries.	Kind of opening.	Method of ventilation.	Type of ventilator.	Size of ventilator—feet.	Number of revolutions.	Capacity of ventilator.	Number of persons inside.	Average quantity per person.	Number of currents or splits.
H. C. Frick Coke Co.,	Alverton No. 1,	Slope,	Fan,	Brazil,	12x3½	70	37,865	99	374	3
H. C. Frick Coke Co.,	Alverton No. 2,	Drift,	Furnace,		12x5x4		10,045	59	170	1
W. J. Rainey,	Acme,	Shaft,	Fan,	Capell,	10x10	60	79,200	111	713	3
Penn Gas Coal Co.,	Ayers Hollow,	Drift,	Fan,	Irwin,	12x4½	65	45,000	91	497	2
Amyville Gas Coal Co.,	Amyville,	Drift,	Furnace,		10x5x3½		12,250	60	204	2
H. C. Frick Coke Co.,	Bessemer,	Drifts,	Natural,				6,600	93	313	3
			Fan,	Brazil,	10x3	60	22,500			
H. C. Frick Coke Co.,	Buckeye,	Drift,	Fan,	Brazil,	12x3½	75	40,000	140	286	3
Pittsburg Coal Co.,	Big Chief,	Drift,	Fan,	Capell,	9x9	150	14,640	98	150	1
Mt. Pleasant Coke Co.,	Boyer,	Drift,	Natural,				7,250	45	134	1
Bowman Bros.,	Bowman,	Drift,	Natural,				2,800	24	116	2
H. C. Frick Coke Co.,	Calumet,	Shaft,	Fan,	Kenny,	20x7	60	70,690	135	524	3
H. C. Frick Coke Co.,	Central,	Slope,	Fan,	Vulcan,	20x7	65	70,785	133	532	3
H. C. Frick Coke Co.,	Diamond,	Drift,	Natural,				9,400	35	269	1
J. R. Stauffer & Co.,	Dexter,	Drift,	Natural,				6,625	18	368	1
Pittsburg Coal Co.,	Eureka,	Drift,	Fans,	Stine,	6	200	100,800	135	695	3
				Stine,	6	200				
				Brazil,	10	65				
Pittsburg Coal Co.,	Euclid,	Shaft,	Fan,	Brazil,	16x5	75	43,150	109	396	2
Bessemer Coke Co.,	Empire,	Drift,	Furnace,		12x5x3½		24,000	54	444	1
H. C. Frick Coke Co.,	Enterprise,	Drift,	Natural,				8,880	26	341	1
B. F. Keister & Co.,	Franklin,	Drift,	Furnace,		12x4½x3½		10,920	23	474	1
Pittsburg Coal Co.,	Guffey,	Drift,	Fan,	Capell,	9x9		17,000	150	170	3
Hecla Coke Co.,	Hecla No. 1,	Shaft,	Fan,	Brazil,	20x5½	75	74,200	158	470	4
Hecla Coke Co.,	Hecla No. 2,	Shaft,	Fan,	Vulcan,	30x10	36	85,000	290	293	3
Painter & Fogg,	Hester,	Drift,	Fan,	Stine,	4	90	7,500	27	277	1
Bessemer Coke Co.,	Humphrey,	Drift,	Fan,	Brazil,	10x3½	60	32,400	64	506	2
H. C. Frick Coke Co.,	Jimtown,	Drift,	Fan,	Nameless,	6	85	40,000	90	450	1
H. C. Frick Coke Co.,	Mullin,	Drift,	Fan,	Brazil,	10x3½	65	27,600	50	552	1
H. C. Frick Coke Co.,	Mammoth shaft,	Shaft,	Fan,	Vulcan,	9x25	55	158,900	163	975	3
H. C. Frick Coke Co.,	Mammoth slope,	Slope,	Fan,	Vulcan,	9x25	55	45,140	98	461	2

Continental Coke Co.,	Marguerite No. 1,	Drift,	Furnace,	....	5x3½x13	....	17,750	88	202	2
Continental Coke Co.,	Marguerite No. 2,	Slope,	Fan,	Capell,	11x11	30	42,000	85	494	3
H. C. Frick Coke Co.,	Mutual No. 2,	Drift,	Natural,	....	....	....	7,860	30	263	1
H. C. Frick Coke Co.,	Mutual No. 3,	Drift,	Fan,	Brazil,	10x3½	65	26,400	68	388	2
H. C. Frick Coke Co.,	Mutual No. 4,	Drift,	Natural,	....	....	....	6,075	30	202	1
Pittsburg Coal Co.,	Ocean No. 1,	Drift,	Fan,	Capell,	7x7	120	37,950	104	365	3
J. W. Shields,	Osceola,	Drift,	Fan,	Robison,	6x16	70	55,600	137	405	2
Pittsburg Coal Co.,	Port Royal No. 1,	Shaft,	Fan,	Pollock,	8x25	55	41,400	60	690	1
Pittsburg Coal Co.,	Port Royal No. 2,	Shaft,	Fan,	Pollock,	8x25	55	34,560	....	....	1
Pennsville Coke Co.,	Pennsville,	Drift,	Fan,	Brazil,	10x3½	65	17,200	37	465	1
Penn Gas Coal Co.,	Penn Gas No. 4,	Drift,	Furnace,	....	6x7x20	....	27,200	60	453	2
H. C. Frick Coke Co.,	Painter,	Drift,	Fan,	Brazil,	12x3½	72	57,500	92	625	2
H. C. Frick Coke Co.,	Rist,	Slope,	Fan,	Brazil,	16x5	65	71,190	154	462	3
H. C. Frick Coke Co.,	Ruff,	Drift,	Fan,	Brazil,	10x3½	60	35,100	55	631	2
South West C. C. Co.,	South West No. 1, A,	Shaft,	Fan,	Vulcan,	8x20	55	64,485	219	294	4
South West C. C. Co.,	South West No. 1, B,	Shaft,	Fan,	Vulcan,	8x20	55	42,500	125	340	3
South West C. C. Co.,	South West No. 2,	Slope,	Fan,	Vulcan,	16x5	50	82,400	122	675	3
South West C. C. Co.,	South West No. 3,	Drift,	Fan,	Vulcan,	8x20	50	36,400	140	260	3
South West C. C. Co.,	South West No. 4,	Drift,	Fan,	Vulcan,	8x20	50	24,200	98	247	2
H. C. Frick Coke Co.,	Standard shaft,	Shaft,	Fan,	Vulcan,	25x10	45	157,050	412	381	8
H. C. Frick Coke Co.,	Standard slope,	Slope,	Fan,	Vulcan,	25x10	45	32,760	99	331	2
Pittsburg Coal Co.,	Shaner slope,	Slope,	Fan,	Capell,	7x7	150	28,880	115	251	1
H. C. Frick Coke Co.,	Summit,	Drift,	Fan,	Brazil,	12x3½	65	44,100	63	700	1
H. C. Frick Coke Co.,	Sunrise,	Drift,	Natural,	....	....	....	14,300	55	260	2
American Sheet Steel Co.,	Scottdale,	Drift,	Fan,	Kenny,	3x12	65	23,760	27	880	1
Cochran Brothers,	Spring Grove,	Drift,	Natural,	....	....	....	8,750	28	312	1
H. C. Frick Coke Co.,	Tip Top,		Fan,	Brazil,	12x3½	70	32,000	59	542	3
H. C. Frick Coke Co.,	United,	Shaft,	Fan,	Vulcan,	20x7	50	52,250	197	265	4
H. C. Frick Coke Co.,	Valley,	Drift,	Fans,	Brazil, Brazil,	12x3½ 12x3½	60 70	81,600	127	643	4
H. C. Frick Coke Co.,	White,	Drift,	Fan,	Brazil,	12x3½	70	24,500	81	302	2
Pittsburg Coal Co.,	Waverly,	Shaft,	Fan,	Brazil,	20x6	55	45,500	102	446	2
Pittsburg Coal Co.,	Yough slope,	Slope,	Fan,	Irwin,	16x4½	72	45,000	98	459	2

TABLE I ventilation, etc., etc.,—Continued.

Names of Operators.	Names of Collieries.	Split No. 1, quantity.	Number of persons in split.	Average quantity per person.	Split No. 2, quantity.	Number of persons in split.	Average quantity per person.	Split No. 3, quantity.	Number of persons in split.	Average quantity per person.	Split No. 4, quantity.	Number of persons in split.	Average quantity per person.
H. C. Frick Coke Co.,	Alverton No. 1,	8,125	35	232	8,360	24	348	5,400	40	135	...	...	...
H. C. Frick Coke Co.,	Alverton No. 2,	8,590	59	146	...	...	...	...	...	...	...	...	...
W. J. Rainey,	Acme,	10,000	26	384	17,230	60	287	11,275	25	451	...	...	...
Penn Gas Coal Co.,	Ayers Hollow,	17,620	51	345	13,000	40	325	...	...	...	...	...	...
Amyville Gas Coal Co.,	Amyville,	1,475	18	82	1,250	42	30	...	...	...	...	...	...
H. C. Frick Coke Co.,	Bessemers,	3,150	18	175	3,250	30	108	6,600	45	147	...	...	...
H. C. Frick Coke Co.,	Buckeye,	17,250	52	332	9,000	48	187	14,040	40	351	...	...	...
Pittsburg Coal Co.,	Big Chief,	8,325	98	85	...	...	...	...	...	...	...	...	...
Mt. Pleasant Coke Co.,	Boyer,	7,250	45	134	...	...	...	...	...	...	...	...	...
Bowman Bros.,	Bowman,	1,200	11	109	1,750	13	134	...	...	...	...	...	...
H. C. Frick Coke Co.,	Calumet,	8,000	60	133	7,250	52	140	3,750	18	208	...	...	...
H. C. Frick Coke Co.,	Central,	11,050	60	184	5,400	45	120	7,750	48	160	...	...	...
H. C. Frick Coke Co.,	Diamond,	9,400	35	269	...	...	...	...	...	...	...	...	...
J. R. Stauffer & Co.,	Dexter,	2,175	18	121	...	...	...	...	...	...	...	...	...
Pittsburg Coal Co.,	Eureka,	19,375	30	652	16,800	55	205	10,500	50	210	...	...	...
Pittsburg Coal Co.,	Euclid,	11,970	45	266	10,550	64	165	...	...	...	...	...	...
Bessemer Coke Co.,	Empire,	13,340	54	247	...	...	...	...	...	...	...	...	...
H. C. Frick Coke Co.,	Enterprise,	4,055	26	156	...	...	...	...	...	...	...	...	...
B. F. Keister & Co.,	Franklin,	6,800	23	294	...	...	...	...	...	...	...	...	...
Pittsburg Coal Co.,	Guffey,	2,700	20	135	9,240	65	142	4,500	15	300	...	...	...
Hecla Coke Co.,	Hecla No. 1,	20,405	38	540	7,290	62	117	6,585	16	412	14,640	42	349
Hecla Coke Co.,	Hecla No. 2,	18,550	100	185	11,550	90	128	20,010	100	200	...	...	...
Painter & Fogg,	Hester,	4,000	27	148	...	...	...	...	...	...	...	...	...
Bessemer Coke Co.,	Humphrey,	14,625	40	365	3,750	24	156	...	...	...	...	...	...
H. C. Frick Coke Co.,	Jimtown,	14,700	90	163	...	...	...	...	...	...	...	...	...
H. C. Frick Coke Co.,	Mullin,	10,175	50	203	...	...	...	...	...	...	...	...	...
H. C. Frick Coke Co.,	Mammoth shaft,	7,200	48	150	23,800	65	366	41,400	50	828	...	...	...
H. C. Frick Coke Co.,	Mammoth slope,	27,000	65	416	12,600	33	382	...	...	...	...	...	...
Continental Coke Co.,	Marguerite No. 1,	2,750	28	98	9,450	60	157	...	...	...	...	...	...
Continental Coke Co.,	Marguerite No. 2,	1,200	24	50	3,360	36	93	2,500	25	100	...	...	...
H. C. Frick Coke Co.,	Mutual No. 2,	4,750	30	158	...	...	...	...	...	...	...	...	...
H. C. Frick Coke Co.,	Mutual No. 3,	5,650	13	434	14,000	55	255	...	...	...	...	...	...
H. C. Frick Coke Co.,	Mutual No. 4,	6,060	30	202	...	...	...	...	...	...	...	...	...
Pittsburg Coal Co.,	Ocean No. 1,	7,890	28	279	4,500	64	70	2,500	12	208	...	...	...

J. W. Shields,	Osceola,	16,080	75	214	14,030	62	226	...	...	...	...	...	...
Pittsburg Coal Co.,	Port Royal No. 1,	16,800	60	280	...	...	...	...	...	...	...	...	...
Pittsburg Coal Co.,	Port Royal No. 2,	17,550	...	...	...	...	...	...	...	...	...	...	...
Pennsville Coal Co.,	Pennsville,	13,200	37	354	...	...	...	...	...	...	...	...	...
Penn Gas Coal Co.,	Penn Gas No. 4,	10,500	45	233	2,520	15	168	...	...	...	...	...	...
H. C. Frick Coke Co.,	Painter,	12,480	34	367	11,760	58	203	...	...	...	...	...	...
H. C. Frick Coke Co.,	Rist,	14,995	52	230	16,900	40	422	11,550	62	186	...	...	...
H. C. Frick Coke Co.,	Ruff,	4,980	25	199	9,000	30	300	...	...	...	...	...	...
South West C. C. Co.,	S. W. No. 1, A,	19,840	55	361	11,700	60	195	7,425	40	185	9,920	54	184
South West C. C. Co.,	S. W. No. 2, B,	11,700	35	334	11,750	30	391	12,250	60	204	...	...	...
South West C. C. Co.,	South West No. 2,	17,400	42	433	350	20	175	11,980	60	199	...	...	...
South West C. C. Co.,	South West No. 3,	10,425	60	173	9,750	40	244	10,150	40	254	...	...	...
South West C. C. Co.,	South West No. 4,	4,000	15	266	16,240	70	232	...	...	...	...	...	...
South West C. C. Co.,	Standard shaft,	22,750	50	455	19,600	50	392	19,220	50	384	21,000	60	350
		No. 5			No. 6			No. 7			No. 8		
		11,200	40	281	11,268	40	282	18,000	60	300	10,900	62	176
H. C. Frick Coke Co.,	Standard slope,	7,200	28	257	11,180	70	159	...	...	...	...	...	...
H. C. Frick Coke Co.,	Shaner slope,	12,750	115	111	...	...	...	...	...	...	...	...	...
Pittsburg Coal Co.,	Summit,	7,700	63	126	...	...	...	...	...	...	...	...	...
H. C. Frick Coke Co.,	Sunrise,	3,800	20	190	10,500	35	300	...	...	...	...	...	...
H. C. Frick Coke Co.,	Scottdale,	13,200	27	488	...	...	...	...	...	...	...	...	...
American Sheet Steel Co.,	Spring Grove,	8,750	28	312	...	...	...	...	...	...	...	...	...
Cochran Bros.,	Tip Top,	9,540	33	289	2,000	18	111	2,000	8	250	...	...	...
H. C. Frick Coke Co.,	United,	15,500	55	282	7,425	32	232	7,460	45	166	7,460	65	114
H. C. Frick Coke Co.,	Valley,	9,030	11	821	10,540	12	1,045	19,040	55	346	11,160	49	227
H. C. Frick Coke Co.,	White,	5,500	18	305	7,975	63	126	...	...	...	...	...	...
Pittsburg Coal Co.,	Waverly,	9,900	55	180	9,700	47	206	...	...	...	...	...	...
Pittsburg Coal Co.,	Yough slope,	10,300	50	206	11,760	48	245	...	...	...	...	...	...

Description of Accidents that Occurred in and About the Mines of the Eleventh Bituminous District for the Year 1901.

Standard shaft, January 14, Andrew Steffle, miner, fatally injured by mine cars; victim was employed with his father who sent him out in the dark to get his safety lamp lighted, and on his way down the heading, his foot became fast between a culvert plank and the track rail, the driver was descending the heading with a trip of loaded cars and did not hear the boy calling until so near that he was unable to stop until the wheels had passed over his foot. The accident was not considered very serious at the time but blood poisoning resulted, causing death nine days later.

Yough Slope, January 14, Joseph Zaranski, miner, killed instantly by an electric current; victim was riding down the grade on the rear end of the trip and upon reaching the end he got off to remove the sprags for the driver, when he came in contact with the electric wires, which were placed on the pillar a few inches apart and protected by a covering of boards two feet in width.

Rist mine, January 19, Isaac Chapman, driver, fatally injured by mine cars; victim was nearing the side track and in attempting to stop got off on the narrow instead of the wide side for the purpose of applying the brake, and was crushed between the cars and the pillar, death resulted a few hours later.

Valley mine, January 25, John Quinn, trip rider, killed instantly by mine cars; victim was about to start the trip from the side track and had given the engineer the signal and was either on the front car or was standing on the track in front of the same, the coupling between the first and second cars was not properly adjusted, and when the engines started to pull, the first car became detached running upon victim.

Standard shaft, January 29, Clarence Fox, driver, fatally injured by mine cars; victim was descending the heading with a trip of cars and upon nearing a trap door, ran ahead and opened the door and in attempting to get on the front car he fell when the cars ran upon him, inflicting injuries that caused death five hours later.

Marguerite mine No. 2, February 5, John Pettock, miner, fatally injured by a fall of horse back roof in stump workings. Victim had made a fall of roof and had started to cut across for a new face when an unseen pot of horseback fell and struck him, inflicting injuries which caused death two days later.

South West mine No. 4, February 14, Kasper Caperell, miner, fatally burned by the flame of powder and coal dust; victim was employed with his son; they had charged a blast and requested the driver (who had instructions to do so) to fire the same which he did, the room was in a distance of about thirty feet, and was near to an in let air current and temperature being low, ice was formed near to the place and the dust was very dry. The shot was placed too straight into the solid and was charged too heavily and blew out igniting the dust, the flame from which reached a distance of about fifty feet to the point where victim and his son were standing, burning them both; the son recovered, but the father was removed to the Connellsville Hospital where he died ten days later; explosive gas never was detected in this mine.

Bessemer mine No. 2, February 18, Charles Phisto, miner, killed instantly by a fall of roof. Victim was employed drawing a rib and while engaged drawing posts for the purpose of making a fall of roof it suddenly fell and with result as stated.

Calumet mine, February 18, Evan Harkin, driver, fatally injured by mine cars. Victim was coming out with a trip of loaded cars, and in attempting to pass by on the narrow side, was crushed between the cars and heading pillar; was removed to the Greensburg Hospital where he died.

Calumet mine, April 1, Peter Carshock, miner, fatally injured by a fall of roof. Victim was employed in drawing stumps, and while shoveling coal into a mine car, the roof fell suddenly, inflicting injuries which proved fatal four days later.

United mine, April 6, Stephen Barno, oven charger, fatally injured by being struck by the charging engine on the coke oven track, while attempting to cross a trestle in front of the engine. The engineer did not see him until after the engine had struck him, his injuries proved fatal two hours later.

Alverton mine No. 2, April 16, Frank Smith, miner, killed instantly by a fall of slate; victim was employed in company with Michael Prepyia, and after firing a blast, they went forward and began to dig at the coal, without first examining the roof when a piece of slate falling struck them both, killing the former, and injuring the latter who recovered.

South West mine No. 1, April 17, Joseph Bush, miner, killed instantly by a fall of slate. Victim was employed in drawing a rib and had made a fall of roof and was engaged cutting across for a new face, when a fall of slate struck him with result as stated.

Port Royal mine No. 2, June 10, list of fatalities resulting from the gas explosions of the above date:

John Peebles, roadman, Port Royal mine, body has not been recovered.

Anton Stickle, pipe hand, Port Royal mine, body recovered September 13.

Frank Davenport, roadman, Port Royal mine, body recovered September 13.

Jerry Daley, Port Royal mine, body recovered September 13.

Michael Roy, mine foreman, Euclid mine, body recovered September 11.

Dennis Wardley; mine foreman, Port Royal mine, body recovered September 11.

Samuel Hadley, assistant mine foreman, Port Royal mine No. 2, body recovered September 17.

Peter Marchonda, boss driver, Port Royal mine, body recovered September 11.

Taylor Gunsallus, Sr., laborer, Port Royal mine, body recovered June 11.

Taylor Gunsallus, Jr., roadman, Port Royal mine, body recovered September 11.

John Keck, mine foreman, Darr mine, body recovered September 11.

David James, machine runner, Port Royal mine, body recovered June 11.

John Conto, machine boss, Darr mine, body recovered September 11.

Barney Bald, coal loader, Waverly mine, body recovered September 17.

William Allison, assistant division mine superintendent, West Newton division, body recovered September 11.

William McCune, division mine superintendent, Port Royal division, body recovered June 11.

Fred. Krugar, roadman, Waverly mine, fatally injured, removed to McKeesport Hospital, where he died June 11.

H. E. Beveridge, coal loader, Port Royal mine, fatally injured, removed to McKeesport Hospital, where he died June 11.

Thomas Smith, mine foreman, Waverly mine, fatally injured, removed to McKeesport Hospital, where he died June 15.

Penn Gas mine No. 4, June 14, Louis Griffion, miner, fatally injured by a fall of coal and slate. Victim was employed drawing a rib; the place was crushed to some extent, and he had a small quantity of the face undermined and was engaged shoveling coal into a car when coal and slate fell striking him; he was removed to his home where he died in two hours.

Standard slope mine, John Bunetsky, miner, caught by a fall of slate; dead when removed. Victim was employed drawing a rib and had attempted to make a roof fall on the evening previous, but failing to get his posts all out, the fall was not complete so he procured the assistance of John McNelsky to hold the lights, and taking a small hatchet he entered under the roof and began to cut a post when suddenly the roof fell, and in attempting to retreat he fell or was thrown down alongside of the rib with his head toward the outside, the debris sliding forward covered him to a depth of about three feet, he called for help after being covered, and a number of the near by workmen assembled and endeavored to extricate him. They could hear him breathing for about twenty minues, but life was extinct when he was removed; the body was examined by a physician who could find no broken bones and gave as his opinion that death was caused by suffocation.

Hecla mine No. 2, August 15, Parnick Wasil, miner, fatally injured by mine cars. Victim was assisting the driver to place a mine car upon the track, and was lifting upon the side of the car when the driver started the mule to pull; the car swung around suddenly and caught his head between the corner of car and an upright timber, inflicting injuries which caused death three days later.

Marguerite mine No. 2, September 27, John McKitty, miner, fatally injured by a fall of slate and roof coal. Victim was employed cutting off a corner preparatory to putting a hauling track through an angling cross-cut which had been driven through the chain pillar between two headings; at this point the slate had been blasted down on the heading and perhaps shattered over the side and as he neglected to place a post under, it fell striking him inflicting injuries which proved fatal five hours later.

Standard shaft mine, September 30, John Telemack, miner, killed instantly by a fall of roof; two men were engaged drawing the chain pillar between two butt headings, and were preparing to make a roof fall, and victim went to assist them and taking a pick to cut out a portion of the coal stump, when the roof falling suddenly caught him; it required a force of workmen several hours to recover the body.

Mutual mine No. 2, October 16, William Burkey, American, killed instantly by a fall of roof. Victim was employed drawing heading stumps in company with three other men; there were old posts standing in these openings, and when about to put up a post he observed the roof giving way, and when he attempted to run toward the outside he was caught by the fall; at these particular openings a very large horseback traversed the roof and could not be observed for the roof coal which was very perfect.

Osceola mine, October 21, Robert Smith, miner, fatally injured by a fall of slate. Victim was employed loading coal, and was shoveling coal from under a large quantity of slate which was supported by only one post; a portion of the slate fell knocked the post out, both post and slate striking him; the injuries proved fatal three hours later.

Calumet mine, October 25, Zepro Shaftzis, miner, fatally injured by a small fall of roof coal; victim was employed drawing entry stumps and went down the heading to assist the driver and roadman to place some empty cars upon the track, and got into the front car when a small portion of roof coal fell upon his back. He was taken to his home and on the fololwing morning was removed to the Greensburg Hospital, where he died on the evening of the same day.

Tip Top mine, October 26, Albert Shrinkle, killed instantly by a fall of roof. Victim was employed drawing a rib, and as no person was present at the time it is not known exactly how the same occurred, but as the place was in a manner ready for a roof fall, and as the body was found near the centre of the fall and a pick also, it appears probable that he was cutting at the coal stump which must have been very small. As he did not appear at the mine mouth at the close of the shift, the mine foreman went in search of him, and found his coat and dinner bucket, and as the place had fallen, he concluded that the victim must be under the fall; a force of workmen was started to clear the fall and it required several hours to recover the body.

Mammoth slope mine, November 2, Andrew Katmarchick, coke drawer, killed instantly by being run over by the larries on the coke oven track. Victim went upon top of the ovens to keep warm, and must have been sleeping upon the larry track for as the charging engine was making the first trip at 6 A. M., it being dark and foggy, he was not seen until his body was discovered.

Ruff mine, November 25, Andrew Stumpf, miner,. killed instantly by a fall of roof coal and horseback. Victim was employed drawing heading stumps. He had just started the place; he had cleared the dirt out of this and placed two posts to support the roof, but a blind spar traversed the roof directly in line with the opening, forming a horseback in the roof which could not be observed on account of the coal remaining under the slate, and while cutting the coal from under it the posts fell upon him with result as stated.

Standard shaft mine, November 30, Michael Sirene, fatally injured by falling upon his dinner bucket. Victim was coming out of the mine by the traveling way and upon nearing the shaft bottom it is necessary to cross the same to travel down the wide side to the shaft; upon arriving at this point a trip was approaching and rushing to cross before it his foot struck the rail causing him to fall clear of the track, but striking upon his dinner bucket caused internal injuries, which proved fatal thirty-six hours later.

Mammoth slope mine, December 5, Martin Casper, miner, killed instantly by a fall of roof. Victim was employed drawing a rib and on the evening previous he had prepared the place for a roof fall, but did not draw the posts, perhaps hoping it would crush down during the night, but it did not. In the morning Casper attempted to cut some more from the coal stump and did not place any posts, and the roof falling suddenly caught him with result as stated.

Descriptive List of Mines and Improvements for the Year 1902.

Mines located on and near the Pittsburg Division of the Baltimore and Ohio Railroad:

Osceola.—Drift opening, Pittsburg low seam, ventilation and drainage satisfactory, except that the system of splitting the air current does not meet the requirements, but preparation is being made for an overcast which will correct this.

Big Chief.—Drift opening, Pittsburg low seam, drainage fair, but I have had cause to complain of the irregularity of ventilation; this mine is ventilated in connection with Guffey and Shaner slope mines, by one fan, and has been very unsatisfactory; a number of changes are being made in the system which will improve the conditions, but I fear they will not prove satisfactory until more power is added.

Guffey.—Drift opening, Pittsburg low seam, drainage fair, but ventilation similar to that of Big Chief. An electric motor main haulage has been installed, superceding the animals used formerly, and the change has proved very satisfactory.

Shaner Slope.—Slope opening, Pittsburg low seam, the drainage has been greatly improved during the year and is in very fair condition, but the ventilation is similar to that of Big Chief and Guffey. An electric motor main haulage has been installed during the year, which is giving general satisfaction.

Ocean No. 1.—Drift opening, Pittsburg low seam. Drainage fair, but ventilation unsatisfactory, notwithstanding that a new air shaft has been opened near the face of the workings, but on account of the number and location of doors the current has been irregular, but preparation is being made to erect overcasts and the changes will bring the mine up fully to the standard.

Ayers Hollow and Penn Gas No. 4, are directly connected and were ventilated by the combined power of an exhaust fan and furnace, both working on the return air current of both mines, and the ventilation was not at all satisfactory, and after consulting with the mine foreman, James H. Absalom, we decided to ventilate Ayers Hollow direct by the fan and Penn Gas No. 4, with the furnace, and I am pleased to state that on my last visit the condition of both mines was satisfactory, except the drainage in some portions of Penn Gas No. 4, where a surplus of water is encountered by drawing ribs and the elevation being uniform makes it difficult to drain.

Amyville.—Drift opening, Pittsburg low seam. The ribs and stumps of two old mines are being taken out at the one opening also some solid coal which had been left in a swamp on account of water which has been pumped out recently. During the month of November fire was started by the heat of the furnace, and no attempt was made to extinguish it for some time until it had gained headway in the old workings and reached the main heading where there is but small pillars on either side, and on account of breaks to the surface, it seems impossible to seal it air tight, and I fear it will be necessary to abandon the opening entirely, and gain an entrance to the coal by another opening. The system of mining in former years, the ventilation and drainage have not been up to the standard of the requirements.

Yough Slope.—Slope opening, Pittsburg low seam. Ventilation and drainage satisfactory, but the means of egress does not meet the requirements, I have brought the matter before the coal company, and they have decided to open a new hoisting shaft to be equipped with modern appliances, and use the present slope for a traveling way, and when such improvements are completed it will place the mine in the list of the best in the State, as the present inside workings as well as the coal field are favorable for a first class mine.

Euclid.—Shaft opening, Pittsburg high seam, ventilation and drainage fair. A slight creep has developed in a portion of the mine which has caused the loss of a portion of two butt headings. A new shaft is being opened for the purpose of ventilation and drainage, which will add very much to the improvement of the mine.

Port Royal Nos. 1 and 2.—Shaft openings, Pittsburg high seam. These two mines are located as follows: No. 1 hoisting shaft on the east side of the Youghiogheny river, and on the line of the Baltimore and Ohio Railroad. No. 2 hoisting shaft, and also the ventilating shaft for both mines are located on the west side of the river, and they are directly connected by three tunnel entries passing under the river, also by several openings in the abandoned parts of the mines. In No. 2 mine some time prior to June 10, a creep or squeeze had developed between Nos. 21 and 25 butt entries, and adjacent to No. 5 face heading side track. On the morning of June 10, the mine was examined by Wm. Gleason, the regular fire boss, and no danger was reported, but a small quantity of explosive gas in two or three headings, at the faces, also the progress of the creep was reported, and danger boards placed at the entrances of Nos. 24 and 25 entries, in which places the creep prevailed, to prevent persons from entering the same. After an examination by mine foreman, Dennis Wardley, and assistant Samuel Hadley, the danger boards were removed and the mine was operated during the day as usual with open lights in all portions. Four persons namely, John Peebles, Anton Stickle, Frank Davenport and Jerry Daley, were set to work erecting cribs in No. 35 room off No. 21 butt entry, and adjacent to No. 5 face side track, to arrest the progress of the creep in that section, the material was taken in by way of a cross-cut between the side track and the room, which had been made at some previous time, perhaps for ventilation. The mine was operated throughout the day, the shift closing at 4 P. M.

Between 5 and 6 P. M., the same four persons re-entered the mine for the purpose of continuing the erection of the cribs, also two other persons, machine runners, entered and went into the straight main headings to cut coal. At 6.15 P. M., an explosion occurred which alarmed those in charge of the machinery at the shaft top; the mine foreman, and other officials were notified and a rescuing party was formed and entered the mine, other persons arriving later also entered, until they numbered about twenty. When they reached the entrance of No. 20 butt entry they observed two lights approaching from the straight main headings, which proved to be the two machine runners, who said that they had felt a concussion, but thought it to be the result of a fall, and they continued to work until the air pressure was shut off, and upon coming to the crosscut they observed smoke and dust and concluded to come out. This proved to the exploring party, that beyond all doubt, the explosion occurred in the No. 25 face section, so pushing on in that direction they reached the cribs, and there they found the bodies of Anton Stickle, Frank Davenport and Jerry Daley, but on account of the density of the after damp, they were unable to remove them, and as three of their number became stupid from the effects of the damp, they were compelled to again retreat to the entrance of No. 20 entry, and those who were overcome by the damp were taken out by others of the party. When on their way out they were passed by some other persons who proceeded to join the party inside. Nothing further is known of what occurred inside until 10.15 P. M. when a second explosion occurred which resulted in the death of all who were in the mine except two, who were only a short distance from the bottom of No. 1 shaft, and three others who were rescued by a party a short time after, and removed to the McKeesport Hospital on the following morning, where two died on that date and the other one on June 15, thus increasing the death rate to nineteen. No further attempt was made to explore the mine on that night.

Inspector Callaghan, of the Ninth District, having received notice, arrived at the scene about 9 A. M., June 11, and forming an exploring party entered the mine, some of the party engaged in removing the bodies which were found on the main tunnel, and had removed that of Taylor Gunsallus, Sr., and were bearing that of Wm. McCune, when a third explosion occurred, about 10.30 A. M., the flame of which reached over and beyond some of the party, burning them slightly, the entire party retreated, leaving the body of McCune behind.

A short time after a party entered the mine and recovered the body of McCune. I had not received notice of the disaster, but seeing the account of it in a morning paper, I proceeded to the scene. A party was formed consisting of George Santmyer, superintendent of Washington Run mines; Charlton Dixon, Inspector of Mines, Pittsburg Coal Company; John W. Hindmarsh, now superintendent Port Royal

Division; Matthew Labon, formerly assistant mine foreman Port Royal No. 1 mine, and myself. We entered the mine and made an examination of the return air way and from the indications and realizing that two after explosions had occurred, we were satisfied that there was fire in the mine, and that beyond doubt the victims were all dead; we returned to the outside, and a conference was held at which it was decided to make no further attempt to explore the mine, but to place a watch to report any changes, but as it was known that there was still one body on the main tunnel, about 10 P. M., a party was formed which entered the mine and recovered it, which proved to be that of David James.

On the following date June 12, the coroner of Westmoreland county, held an inquest on the body of William McCune, and the jury rendered the following verdict: "We find that William McCune, came to his death by an explosion of gas in Port Royal mine No. 2, of the Pittsburg Coal Company, on June 10, while attempting to recover the bodies of four men who had been killed by a former explosion occurring about 6 P. M., of the same date, the second explosion was likely caused by the ignition of some inflammable material from the first explosion."

On the same date a consultation was held by the officials of the company, Inspector James Blick, of the Seventh District and my self, when the question of flooding the mine was considered, but it was decided to await further developments.

June 17, a conference was held by the officials of the coal company, and Inspectors Blick, Louttit, Callaghan and myself, at which it was decided to seal up all that part of the mine, in which it seemed probable that fire existed. This work was placed in charge of Charlton Dixon, Inspector, and Benjamin Ferredy, division superintendent of the Pittsburg Coal Company, until the bodies had all been recovered on September 17, except that of John Peebles, which thus far has not been recovered.

As the sealing up of the fire district in No. 2 mine had been completed and the company was desirous of reparing No. 1, mine preparatory to operating it, I summoned Inspector Callaghan, and on July 17, we inspected all stoppings in No. 2 mine which enclosed the fire district, also the general workings of No. 1 mine, after which we issued the following letter:

Connellsville, Pa., July 17.

Mr. John Hindmarsh, Superintendent of Mines, Pittsburg Coal Company, Smithton, Pa.:

Dear Sir: After making a careful inspection of your Port Royal Nos. 1 and 2 mines, we believe that with extra care you can continue operations in No. 1 mine.

It is expected that you will have two first class fire bosses examine the mine every day before the men enter it, and the stoppings in No. 2 mine are to be examined at least twice every day by some official, and that safety lamps be used in all places giving off explosive gas. We believe with such care exercised every day, that your mine is practically safe for men to work in.

(Signed)

BERNARD CALLAGHAN,
Mine Inspector, Ninth District.
W. J. MOLLISON,
Mine Inspector, Eleventh District.

But I requested that when the mine was repaired, that I should receive notice so that I could again inspect it before the miners commenced work.

Having received notice I again inspected No. 1 mine on July 24, and found the conditions such that I issued the following notice:

Scottdale, Pa., July 24, 1901.

Pittsburg Coal Company, Mr. J. W. Hindmarsh, Division Superintendent, Smithton, Pa.:

Dear Sir: After a thorough inspection of your Port Royal mine No. 1, I deem the same safe to work only with the use of locked safety lamps in all parts, except in the main inlet air current to the present hauling side track, to which point open lights may be used; hoping that this will prove satisfactory and that you will comply strictly with the same, I am,

Yours truly,
W. J. MOLLISON,
Mine Inspector, Eleventh Bituminous District.

July 25, operations were resumed in No. 1 mine. August 23, by request accompanied by Superintendent Hindmarsh, and Mine Foreman Charles McKay, we made an examination of the conditions at the different stoppings enclosing the fire district of No. 2 mine, to decide upon the practicability of opening the same for the purpose of making an attempt to recover the bodies that were entombed, and after a consultation we decided that it would be reasonably safe, realizing that there would be a certain amount of risk to be taken regardless of the length of time it had remained closed, and on September 7 operations were suspended in No. 1 mine.

September 9, the stoppings were removed and the vetilation permitted to work on the entrance, and on September 10, the exploring party began their search for the bodies. September 11 the party reached the inner end of No. 20 butt entry and at the junction where the same intersects No. 5 face heading and near the end of the hauling side track, at which seven bodies were recovered, being those of

Dennis Wardley, John Keck, Michael Roy, William Allison, Peter Marchando, John Conto, and Taylor Gunsallus, Jr.

Upon receipt of notice I visited the mine on September 13, on which date three other bodies were recovered, being those of Frank Davenport, Anton Stickle and Jerry Daley, victims of the first explosion.

September 17, two other bodies were recovered, being those of Samuel Hadley and Barney Bald, thus completing the entire list, except the body of John Peebles, which thus far has not been recovered.

September 23, a conference was held by the officials of the coal company, Inspector Blick and myself, to determine whether or not it was practicable under the prevailing conditions to make further attempt to recover the body of John Peebles, and after hearing the statements of those in charge of the searching party, and considerable discussion, it was again decided to seal up that part of the mine, and endeavor to recover the body at some future time when the prospects might be more encouraging; soon after the work of sealing began.

October 9, I issued the following notice:

Scottdale, Pa., October 9, 1901.

Mr. John W. Hindmarsh, Superintendent of Mines, Pittsburg Coal Company, Smithton, Pa.:

Dear Sir: You will please not set any person to work in Port Royal mine No. 1 except for the purpose of repairs, until you have substantially sealed off all workings on the east side of main tunnel in No. 2 mine.

P. S.—And you will please not set any persons to work in No. 2 mine, except for the purpose of repairs, until it has been thoroughly inspected by myself or other inspectors, after having received due notice from you that it is in readiness to be operated, hoping that you will observe the same, I am

Yours truly,
W. J. MOLLISON,
Mine Inspector, Eleventh Bituminous District.

At Smithton, Pa., October 7, Coroner Wynn, of Westmoreland county held an inquest on the death of Frank Davenport, one of the victims of the first explosion, when the jury returned the following verdict: "We find that Frank Davenport, came to his death by an explosion of gas in Port Royal mine No. 2 of the Pittsburg Coal Company, in Rostraver township, on June 10, 1901. We find that the gas was likely given off from a creep or squeeze in that part of the mine where he was working that day, and the gas was likely ignited by the light of John Peebles, who was employed with deceased building a crib. The responsibility for the explosion rests upon the mine foreman and his assistant, and we recommend that hereafter safety lamps be used in this mine, especially where gas is likely to be developed suddenly.

"C. A. WYNN,
"Coroner."

Jurors: Alex. Watkins, Jacob S. Morrow, Eli S. Sager, Thomas T. Frances, Joseph A. Smith, Lorenza H. Young.

October 15, having received notice that No. 1 mine was in readiness to be operated I inspected all stoppings along the enclosed district of No. 2 mine, and I issued the following inspection report, I consider Port Royal mine No. 1 safe to operate only with the use of locked safety lamps in all parts, except in the main inlet air current to the interior end of the present hauling side track, to which point open lights may be used, as heretofore instructed.

W. J. MOLLISON,
Mine Inspector, Eleventh Bituminous District.

November 29, I inspected the workings of No. 1 mine and found them in reasonably fair condition for the number of persons employed ,and I gave the following inspection report: "Ventilation fair, drainage satisfactory and at the close of this report No. 1 mine continue in operation with the use of safety lamps as stated. I am unable to make any statement as to the condition of these mines previous to June 10, as I never had visited them previous to that date.

In concluding my report of this lamentable disaster, I am unable to make a positive statement as to who was responsible for it. I have examined the mine as far as practicable, and have obtained all the information possible, and I am unable to state in which exact section of the mine, and under what circumstances the gas was ignited, and I consider that the discovery of the body of John Peebles (which thus far has not been accomplished) would be the only evidence which could assist in arriving at a satisfactory conclusion. It may rest upon the mine foreman as stated by the coroner's jury, but if so, he was merely following the precedent established for many years in Port Royal as well as in many other mines in the Pittsburg seam. And as to when and where safety lamps should be used, there may be divided opinions, and also there may be very divided opinions as to whether or not explosive gas is likely to be carried through certain parts of mines, and as the conditions at mines very often change from one day to another, that in many cases it is difficult for the mine foreman to decide at what exact point it becomes absolutely necessary to change from the use of open lights to safety lamps, and I hope that this subject will receive the careful consideration of all persons interested, and that we may be able to define the line of safety so as to avoid a repetition of the Port Royal disaster, or perhaps something worse.

Waverly.—Shaft opening, Pittsburg high seam, ventilation and drainage satisfactory. A new fan diameter sixteen feet, has replaced the old one formerly in use, which has greatly improved the ventilation.

Eureka.—Drift opening, Pittsburg high seam, ventilation and drainage satisfactory.

Spring Grove.—Drift opening, Connellsville coking seam, retreating with ribs, stumps and pillars, ventilation and drainage satisfactory.

Sterling No. 2.—Drift opening, Connellsville coking seam, retreating with ribs, stumps and pillars, ventilation satisfactory, drainage fair when the pumps are running regularly.

Jimtown.—Drift opening, Connellsville coking seam, retreating with ribs, stumps and pillars. Ventilation in some portions are not fully up to the requirements; drainage fair.

Mines on and Near the Mt. Pleasant Branches.

Rist.—Slope opening, Connellsville coking seam, ventilation and drainage satisfactory on all visits.

White.—Drift opening, Connellsville coking seam. On my first visit the ventilation was defective in some portions, and the air was so contaminated with black damp that it was almost impossible to keep a light, and the means of egress did not meet the requirements. I complained to those in charge, in reference to the condition, and I am pleased to state that it has been very much improved. On my last visit the mine was in fair condition.

Eagle.—Drift opening, Connellsville coking seam, retreating with pillars and stumps, has been exhausted and abandoned during the year, condition fair when visited.

Summit.—Drift opening, Connellsville coking seam, ventilation and drainage fair.

Franklin.—Drift opening, Connellsville coking seam, ventilation and drainage satisfactory.

Tip Top.—Drift opening, Connellsville coking seam. On my first visit the ventilation and also the drainage was defective, but since that time the location of the fan has been changed, and the ventilation as well as the drainage improved, and on my last visit the condition was satisfactory.

Scottdale.—Drift opening, Connellsville coking seam, ventilation and drainage satisfactory on all visits.

Dexter.—Drift opening, Connellsville coking seam. On my first visit the ventilation was very defective, and the air contaminated by black damp, which was produced in old abandoned workings, which had been cut into. I notified the officials to correct the evil, and I recommended the erection of a small furnace, which has been completed and has made some improvement, but I fear that it will not give satisfactory results until a small shaft is opened in another part of the mine; drainage satisfactory.

Painter.—Drift opening, Connellsville coking seam, ventilation and drainage satisfactory on all visits except one, when a few persons were working in an entry where the ventilation did not meet the requirements.

Diamond.—Drift opening, Connellsville coking seam, retreating with ribs, stumps and pillars. The ventilation is somewhat irregular caused by several openings to the surface, but on each visit I have found it in a healthful condition, with drainage fair.

Buckeye.—Drift opening, Connellsville coking seam. On my first visit the ventilation was defective, also the means of egress was not fully up to the requirements, but an air shaft was being opened which has been completed which has improved the ventilation, also the means of egress have been improved and is in satisfactory condition, and on my last visit the ventilation was satisfactory with drainage fair.

Mullin.—Drift opening, Connellsville coking seam, the ventilation is not fully up to the requirements, the means of egress were also defective, but has been improved and is in fair condition; drainage fair.

Standard Slope.—Slope opening, Connellsville coking seam, the ventilation has been greatly improved during the year, but is not fully up to the requirements in all parts; drainage fair.

Standard Shaft.—Shaft opening, Connellsville coking seam, is ventilated in connection with the slope mine by the power of one fan, and not withstanding that the fan was producing 189,700 cubic feet of air, in some parts the ventilation did not come up fully to the requirements, but the placing of another fan to assist in the ventilating of these two mines, and Mullin drift, is under consideration, which it is probable that it will remove the evil; the drainage is satisfactory.

Sunrise.—Drift opening, Connellsville coking seam; while the ventilation is somewhat irregular on account of several openings to the surface, yet on each visit it was in fair condition; drainage fair.

Bessemer No. 1.—Drift opening, Connellsville coking seam, retreating with ribs, stumps and pillars, ventilation and drainage fair on each visit.

Bessemer No. 2.—Drift opening, Connellsville coking seam; ventilation and drainage not fully up to the requirements in some parts.

South West No. 2.—Slope opening, Connellsville coking seam, ventilation and drainage fair.

South West No. 1A.—Shaft opening, Connellsville coking seam, ventilation and drainage satisfactory.

South West No. 1B.—Shaft opening, Connellsville coking seam; ventilation satisfactory.

Acme.—Shaft opening, Connellsville coking seam; ventilation fair; drainage requires improvement in some parts.

Mines on and Near the South West Branch, Pennsylvania Railroad.

Pennsville.—Drift opening, Connellsville coking seam; ventilation and drainage satisfactory.

Valley.—Drift opening, Connellsville coking seam. On my first visit the ventilation was defective in some parts; a new Brazil fan had been installed to ventilate the new parts of the mine, and the air currents had not yet been properly coursed. The fan which ventilated the old portion of the mine was placed inside of the mine, and I recommended its removal to the outside to a shaft near the mine entrance; the change has been completed and two overcasts built, and I am pleased to state that on my last visit the ventilation and drainage were perfectly satisfactory.

Enterprise.—Drift opening, Connellsville coking seam, retreating with stumps and pillars; although the ventilation is somewhat irregular caused by several openings to the surface I have found the mine in healthful condition, with drainage satisfactory.

Union.—Drift opening, Connellsville coking seam, ventilation and drainage fair.

South West No. 4.—Drift opening, Connellsville coking seam, ventilation satisfactory and drainage fair.

Alverton No. 1.—Slope opening, Connellsville coking seam; ventilation was fair, with drainage satisfactory.

Alverton No. 2.—Drift opening, Connellsville coking seam, on my former visit the ventilation was defective, but on my last visit the ventilation and drainage were fair.

Empire.—Drift opening, Connellsville coking seam; on my last visit ventilation and drainage fair.

South West No. 3.—Drift opening, Connellsville coking seam; ventilation and drainage satisfactory.

Ruff.—Drift opening, Connellsville coking seam, during the early part of the year ventilation and drainage were very defective, but on my last visit they were fair.

Central.—Slope opening, Connellsville coking seam; ventilation and drainage fair. A new slope is being opened, and a new tipple built, which when completed will place the mine with the best in the region.

Mines on and Near the Sewickley Branch of the SouthWest Pennsylvania Railroad.

Boyer.—New drift opening, Connellsville coking seam. Located one mile northwest of Hecla; when visited the means of ventilation had not yet been installed, and the ventilation required improvement in some parts; drainage satisfactory.

Hecla No. 1.—Shaft opening, Connellsville coking seam; ventilation and drainage satisfactory on all visits, a tender roof extends over a part of the mine, also a very wet soft bottom, which causes it to be difficult to keep the working places open when drawing ribs.

Hester.—Drift opening, Connellsville coking seam; during the fore part of the year the ventilation and also the means of egress did not comply fully with the law. I notified those in charge to improve the same, and on my last visit the mine was in satisfactory condition.

Mutual No. 4.—New drift opening, Connellsville coking seam, located one and one-half miles north of Hecla; on my visit the means of ventilation was just under course of construction, and the ventilation required improvement at some working faces; drainage satisfactory.

Calumet.—Shaft opening, Connellsville coking seam, a larger fan has been installed during the year, which has improved the ventilation. The drainage required improvement in some portions; this mine also has a very wet soft bottom, which causes considerable trouble in drawing ribs, and some have been lost by the upheaval of the bottom.

Mammoth Shaft and Slope.—Openings, Connellsville coking seam, ventilation and drainage fair. These mines also are somewhat affected with soft bottoms, and the slope especially has very heavy grades.

United.—Shaft opening, Connellsville coking seam; on my last visit the ventilation was fair. Preparation was being made to renew the foundation of the fan, which will permit of running it faster; the widening of the inlet was also under consideration, which if completed will make ample provision for ventilation. The drainage on one side of the mine is excellent, but on the other, the elevation is very irregular and the drainage requires improvement.

Clare.—New drift opening, Connellsville coking seam; does not yet come under the provisions of the law.

Hecla No. 2.—Shaft opening, Connellsville coking seam; ventilation requires improvement, especially in reference to the system of splitting the air currents; drainage fair. A very soft dangerous roof extends over a great part of the mine, which causes extra expense to timber the headings, and also adds to the dangers in the working thereof.

Mutual No. 2.—Drift opening, Connellsville coking seam, retreating with ribs, stumps and pillars. Ventilation does not fully meet the requirements of law.

Mutual No. 3.—Drift opening, Connellsville coking seam; ventilation and drainage satisfactory.

Humphrey.—Drift opening, Connellsville coking seam. A mine fire was in progress in the early part of the year, the origin of which was described by Inspector C. B. Ross, of the Second Bituminous District in his annual report for 1900, and in continuance thereof I will state that the fire district remained sealed up until August, when it was opened up and by all indications the fire was extinguished. The mine was explored as far as possible, and at the entrance to the old abandoned workings which could not be penetrated, a stopping was built and a thermometer placed on the inside of it, and a record of the temperature was kept which ranged from sixty-six degrees to seventy-two degrees, which seems to remove all fear of further danger.

Marguerite No. 1.—Drift opening, Connellsville coking seam, retreating with ribs, stumps and pillars. Ventilation has not been fully up to the requirements of the law, yet it has been in very healthful condition, with drainage fair.

Marguerite No. 2.—Slope opening, Connellsville coking seam; in the early part of the year the ventilation was somewhat defective, but on my last visit a new Capell fan eleven feet in diameter was in operation, but on account of the heating of the new engine could not be run up to a reasonable capacity, and the ventilation was still below the requirements at some working faces, but I am satisfied that when the fan is in proper working order, it will furnish ample means, and if the air is conducted to the faces there will be adequate ventilation; drainage fair.

Emma and Home.—Drift openings, Connellsville coking seam; did not come under the requirements of the law, but were in fair condition when visited.

TABLE I— Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Eleventh Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
H. C. Frick Coke Co.						
Alverton No. 1,	Westmoreland,	O. W. Kennedy,	Scottdale,	Robert Depriest,	Alverton,	S. W. P. R. R.
Alverton No. 2,	Westmoreland,	O. W. Kennedy,	Scottdale,	Robert Depriest,	Alverton,	S. W. P. R. R.
Bessemer Nos. 1 and 2,	Westmoreland,	O. W. Kennedy,	Scottdale,	James Devlin,	Mt. Pleasant,	S. W. P. R. R.
Buckeye,	Westmoreland,	O. W. Kennedy,	Scottdale,	J. M. Whitlaw,	Stauffer,	S. W. P. R. R.
Calumet,	Westmoreland,	O. W. Kennedy,	Scottdale,	John Stevenson,	Mammoth,	S. W. P. R. R.
Central,	Westmoreland,	O. W. Kennedy,	Scottdale,	Robert Ramsay,	Feree,	S. W. P. R. R.
Diamond,	Fayette,	O. W. Kennedy,	Scottdale,	D. B. Stauft,	Scottdale,	Mt. Pleasant Branch B. & O. R. R.
Enterprise,	Westmoreland,	O. W. Kennedy,	Scottdale,	Andrew Neish,	Alverton,	S. W. P. R. R.
Jimtown,	Fayette,	O. W. Kennedy,	Scottdale,	J. M. White,	Dawson,	Baltimore and Ohio Railroad.
Mutual No. 2,	Westmoreland,	O. W. Kennedy,	Scottdale,	E. R. Laughrey,	United,	S. W. P. R. R.
Mutual No. 3,	Westmoreland,	O. W. Kennedy,	Scottdale,	E. R. Laughrey,	United,	S. W. P. R. R.
Mutual No. 4,	Westmoreland,	O. W. Kennedy,	Scottdale,	E. R. Laughrey,	United,	S. W. P. R. R.
Mammoth shaft,	Westmoreland,	O. W. Kennedy,	Scottdale,	John Stevenson,	Mammoth,	S. W. P. R. R.
Mammoth slope,	Westmoreland,	O. W. Kennedy,	Scottdale,	John Stevenson,	Mammoth,	S. W. P. R. R.
Mullin,	Westmoreland,	O. W. Kennedy,	Scottdale,	J. M. Whitlaw,	Stauffer,	Mt. Pleasant Branch B. & O. R. R.
Painter,	Fayette,	O. W. Kennedy,	Scottdale,	D. B. Stauft,	Scottdale,	Mt. Pleasant Branch B. & O. R. R.
Rist,	Fayette,	O. W. Kennedy,	Scottdale,	W. C. Mullin,	Broad Ford,	Mt. Pleasant Branch B. & O. R. R.
Ruff,	Westmoreland,	O. W. Kennedy,	Scottdale,	Robert Ramsay,	Feree,	S. W. P. R. R.
Standard shaft,	Westmoreland,	O. W. Kennedy,	Scottdale,	James S. Mack,	Mt. Pleasant,	S. W. P. R. R. and B. & O. R. R.
Standard slope,	Westmoreland,	O. W. Kennedy,	Scottdale,	James S. Mack,	Mt. Pleasant,	S. W. P. R. R. and B. & O. R. R.
Sunrise,	Westmoreland,	O. W. Kennedy,	Scottdale,	James Devlin,	Mt. Pleasant,	S. W. P. R. R.
Summit,	Fayette,	O. W. Kennedy,	Scottdale,	W. C. Mullin,	Broad Ford,	Mt Pleasant Branch B. & O. R. R.
Tip Top,	Fayette,	O. W. Kennedy,	Scottdale,	James Lynch,	Scottdale,	Mt Pleasant Branch B. & O. R. R.
United,	Westmoreland,	O. W. Kennedy,	Scottdale,	E. R. Laughrey,	United,	S. W. P. R. R.
Valley,	Fayette,	O. W. Kennedy,	Scottdale,	James Lynch,	Scottdale,	S. W. P. R. R.
White,	Fayette,	O. W. Kennedy,	Scottdale,	W. C. Mullin,	Broad Ford,	Mt Pleasant Branch B. & O. R. R.
Pittsburg Coal Co.						
Big Chief,	Westmoreland,	Geo. W. Schluederberg,	Pittsburg,	Walter Calverly,	Scott Haven,	Baltimore and Ohio Railroad.
Euclid,	Westmoreland,	Geo. W. Schluederberg,	Pittsburg,	J. W. Hindmarsh,	Fitzhenry,	Baltimore and Ohio Railroad.
Eureka,	Westmoreland,	Geo. W. Schluederberg,	Pittsburg,			Baltimore and Ohio Railroad.
Guffey,	Westmoreland,	Geo. W. Schluederberg,	Pittsburg,	Walter Calverly,	Scott Haven,	Baltimore and Ohio Railroad.
Ocean No. 1,	Westmoreland,	Geo. W. Schluederberg,	Pittsburg,	Walter Calverly,	Scott Haven,	Baltimore and Ohio Railroad.
Port Royal No. 1,	Westmoreland,	Geo. W. Schluederberg,	Pittsburg,	J. W. Hindmarsh,	Fitzhenry,	Baltimore and Ohio Railroad.
Port Royal No. 2,	Westmoreland,	Geo. W. Schluederberg,	Pittsburg,	J. W. Hindmarsh,	Fitzhenry,	P. & L. E. R. R.
Shaner slope,	Westmoreland,	Geo. W. Schluederberg,	Pittsburg,	Walter Calverly,	Scott Haven,	Baltimore and Ohio Railroad.
Waverly,	Westmoreland,	Geo. W. Schluederberg,	Pittsburg,			Baltimore and Ohio Railroad.
Yough slope,	Westmoreland,	Geo. W. Schluederberg,	Pittsburg,	J. W. Hindmarsh,	Fitzhenry,	Baltimore and Ohio Railroad.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Southwest Connellsville Coke Co.						
South West No. 1, A,	Westmoreland,	O. W. Kennedy,	Scottdale,	Wm. Ramsay,	Mt. Pleasant,	S. W. P. R. R.
South West No. 1, B,	Westmoreland,	O. W. Kennedy,	Scottdale,	Wm. Ramsay,	Mt. Pleasant,	S. W. P. R. R.
South West No. 2,	Westmoreland,	O. W. Kennedy,	Scottdale,	John Q. Finch,	Mt. Pleasant,	S. W. P. R. R.
South West No. 3,	Westmoreland,	O. W. Kennedy,	Scottdale,	W. O. Cowan,	Alverton,	S. W. P. R. R.
South West No. 4,	Westmoreland,	O. W. Kennedy,	Scottdale,	W. O. Cowan,	Alverton,	S. W. P. R. R.
Continental Coke Co.						
Marguerite No. 1,	Westmoreland,	O. W. Kennedy,	Scottdale,	A. H. Pollins,	Pleasant Unity	S. W. P. R. R.
Marguerite No. 2,	Westmoreland,	O. W. Kennedy,	Scottdale,	A. H. Pollins,	Pleasant Unity	S. W. P. R. R.
Hecla Coke Co.						
Hecla No. 1,	Westmoreland,	Thos. Laird,	South West,	Thos. Laird,	South West,	S. W. P. R. R.
Hecla No. 2,	Westmoreland,	Thos. Laird,	South West,	Thos. Laird,	South West,	S. W. P. R. R.
Bessemer Coke Co.						
Empire,	Westmoreland,	R. L. Martin,	Pittsburg,	R. L. Martin, Jr.,	Bradenville,	S. W. P. R. R.
Humphrey,	Westmoreland,	R. L. Martin,	Pittsburg,	G. K. McGunnegle.	Humphrey,	S. W. P. R. R.
W. J. Rainey.						
Acme,	Westmoreland,	T. J. Mitchell,	Connellsville,	Hugh Ross,	Mt. Pleasant,	S. W. P. R. R.
Union,	Westmoreland,	T. J. Mitchell,	Connellsville,	Wm. Duncan,	Alverton,	S. W. P. R. R.
Painter & Fogg.						
Clare,	Westmoreland,	C. H. Fogg,	Greensburg,	W. M. Hart,	Armbrust,	S. W. P. R. R.
Hester,	Westmoreland,	C. H. Fogg,	Greensburg,	W. M. Hart,	Armbrust,	S. W. P. R. R.
Penn Gas Coal Co.						
Ayers Hollow,	Westmoreland,	T. Frank Wolf,	Irwin,	E. V. Williams,	Irwin,	Baltimore and Ohio Railroad.
Penn Gas No. 4,	Westmoreland,	T. Frank Wolf,	Irwin,	E. V. Williams,	Irwin,	Baltimore and Ohio Railroad.
Cochran Bros.						
Spring Grove,	Fayette,	W. H. Cochran,	Dawson,	W. H. Cochran,	Dawson,	Baltimore and Ohio Railroad.
Laughlin & Co.						
Tyrone,	Fayette,	C. Wharton,		C. Wharton,		Baltimore and Ohio Railroad.
B. F. Keister & Co.						
Franklin,	Fayette,	B. F. Keister,	Summit Mines,	B. F. Keister,	Summit Mines	Mt Pleasant Branch B. & O. R. R.

Pennsville Coke Co. Pennsville, ...	Fayette, ...	J. D. Sherrick, ...	Pennsville, ...	J. D. Sherrick, ..	Pennsville, ..	S. W. P. R. R.
American Sheet Steel Co. Scottdale, ...	Fayette, ...	Robert Skemp, ...	Scottdale, ...	Robert Skemp, ..	Scottdale, ...	Mt Pleasant Branch B. & O. R. R.
J. R. Stauffer & Co. Dexter, ...	Fayette, ...	J. R. Stauffer, ...	Scottdale, ...	J. R. Stauffer, ..	Scottdale, ...	Mt. Pleasant Branch B. & O. R. R.
Mt. Pleasant Coke Co. Boyer, ...	Westmoreland, ..	—— Wilson, ...	Greensburg, ...	John Sterling, ..	South West,..	S. W. P. R. R.
J. W. Shields. Osceola, ...	Allegheny, ...	J. W. Shields, ...	Pbg., L. B. 502,	Henry Jones, ...	Emblem, ...	Baltimore and Ohio Railroad.
Bowman Bros. Bowman, ...	Allegheny, ...	Samuel Bowman, ...	McKeesport, ...	Sam'l Bowman,	McKeesport,..	Second Avenue Traction Line.
Amyville Gas Coal Co. Amyville, ...	Westmoreland, ..	R. B. Macintosh, ...	Pittsburg, ...	J. B. Stone, ...	Suter, ...	Baltimore and Ohio Railroad.
J. W. Overholt. Emma, ...	Westmoreland, ..	J. W. Overholt, ...	Scottdale, ...	J. W. Overholt,	Scottdale, ...	S. W. P. R. R.

TABLE II—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Eleventh Bituminous District for the year ending December 31, 1901.

Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
H. C. Frick Coke Co.														
Alverton No. 1,	Westmoreland,	....	1,258	1,379	171,675	112,692	252	293	261	......	3	....	....	24
Alverton No. 2,	Westmoreland,	....	264	407	67,838	44,845	104	270	93	1	1	....	....	18
Bessemer Nos. 1 and 2,	Westmoreland,	....	707	777	108,808	71,737	164	301	153	1	2	144	2,160	25
Buckeye,	Westmoreland,	194	4,286	1,046	204,229	132,469	306	294	313	......	......	....	....	40
Calumet,	Westmoreland,	....	4,152	2,366	201,499	129,090	260	301	315	3	4	....	250	29
Central,	Westmoreland,	....	6,945	283	178,666	115,817	202	309	235	......	1	....	315	40
Diamond,	Fayette,	....	....	239	43,291	28,701	66	307	65	......	......	120	600	6
Enterprise,	Westmoreland,	....	30	149	29,299	19,120	51	270	51	......	2	....	....	12
Jimtown,	Fayette,	....	2,466	2,192	180,260	117,068	204	294	177	......	1	1,750	....	27
Mutual No. 2,	Westmoreland,	113,342	....	1,497	114,839	....	97	290	63	1	2	....	....	13
Mutual No. 3,	Westmoreland,	....	1,651	....	65,859	42,805	100	282	100	......	......	....	....	12
Mutual No. 4,	Westmoreland,	12,606	....	40	12,626	....	......	77	44	......	......	....	....	4
Mammoth shaft,	Westmoreland,	....	8,802	1,382	242,096	154,607	306	304	386	......	2	....	....	52
Mammoth slope,	Westmoreland,	....	5,869	921	161,398	103,072	204	304	183	2	......	....	....	34
Mullin,	Westmoreland,	2,022	1,187	703	43,515	26,402	82	217	82	......	......	....	....	10
Painter,	Fayette,	....	990	1,127	153,052	100,628	228	293	228	......	2	480	2,400	26
Rist,	Fayette,	....	3,087	3,672	290,468	189,173	446	302	348	1	......	2,315	50	42
Ruff,	Westmoreland,	....	1,540	....	90,690	57,903	101	309	117	1	......	....	....	4
Standard shaft,	Westmoreland,	4,191	8,500	5,847	594,806	384,178	735	301	903	4	......	....	185	81
Standard slope,	Westmoreland,	....	1,604	....	138,569	91,310	166	279	189	1	......	....	....	13
Sunrise,	Westmoreland,	....	....	518	72,539	47,825	109	301	100	......	......	48	1,440	9
Summit,	Fayette,	5,068	122	1,959	115,563	71,676	142	304	105	......	......	614	....	20
Tip Top,	Fayette,	21,621	117	392	107,087	56,638	121	305	111	1	......	600	100	22
United,	Westmoreland,	241	4,428	1,602	284,208	185,291	350	302	390	1	1	3	200	38
Valley,	Fayette,	27,492	1,493	1,456	202,820	144,926	251	282	338	1	......	2,100	100	24
White,	Fayette,	....	304	2,883	147,524	96,225	200	302	185	......	......	1,040	....	33
Total and average,	....	186,777	59,802	32,837	4,023,244	2,524,203	5,217	284.34	5,535	18	21	9,214	7,800	658

Pittsburg Coal Co.														
Big Chief,	Westmoreland,	97,352	273	105	97,730			197	103		1	400		5
Euclid,	Westmoreland,	112,811	3,210	296	121,135	3,404	25	173	141		4	300		13
Eureka,	Westmoreland,	156,692	1,825	269	158,786			212.2	138		6	275		14
Guffey,	Westmoreland,	88,880		2	88,882			200.7	102		1	464		11
Ocean No. 1,	Westmoreland,	124,805	8,758	1,448	135,011			228.9	149		2	456		13
Port Royal No. 1,	Westmoreland,	41,954	6,202	708	69,551	13,241	61	161.6	129		1	275		8
Port Royal No. 2,	Westmoreland,	43,844			43,844			88.8	112	19		150		8
Shaner slope,	Westmoreland,	92,841	3,510	307	96,658			190.3	133		1	456		10
Waverly,	Westmoreland,	84,509	2,787	309	92,799	3,332	62	138.7	130		1	300		10
Yough slope,	Westmoreland,	100,880	2,612		103,492			161.3	117	1	2	150		9
Total and average,		944,568	29,177	3,444	1,007,888	19,977	148	175.25	1,254	20	19	3,226		101
S. W. C. C. Co.														
South West No. 1, A,	Westmoreland,		11,607	6,361	411,683	262,476	417	310	495	1				37
South West No. 1, B,	Westmoreland,		5,804	3,181	205,842	131,238	208	310	247		3			18
South West No. 2,	Westmoreland,		2,176	3,358	246,163	160,419	252	311	282		2		6	40
South West No. 3,	Westmoreland,	38,073	4,358	3,147	237,932	128,236	205	310	248					24
South West No. 4,	Westmoreland,		421	1,801	139,744	91,681	151	310	184	1	1			17
Total and average,		38,073	24,366	17,848	1,241,364	774,050	1,233	310.2	1,456	2	6		6	136
Hecla Coke Co.														
Hecla No. 1,	Westmoreland,		6,366	1,596	213,622	151,631	272	284.5	252				300	37
Hecla No. 2,	Westmoreland,		6,010	3,694	403,290	285,966	500	287	487	1			250	62
Total and average,			12,376	5,290	616,912	437,597	772	285.75	739	1			550	99
Continental Coke Co.														
Marguerite No. 1,	Westmoreland,		1,333	1,353	112,851	73,443	133	308	143	1				14
Marguerite No. 2,	Westmoreland,		2,667	2,707	225,701	146,885	267	308	288	1	1			27
Total and average,			4,000	4,060	338,552	220,328	400	308	431	2	1			41
Bessemer Coke Co.														
Empire,	Westmoreland,		500	100	124,000	59,484	120	247	124			125		12
Humphrey,	Westmoreland,		1,376	600	73,485	50,641	100	263	125		1	120	225	14
Total and average,			1,876	700	197,485	110,125	220	255	249		1	245	225	26
W. J. Rainey.														
Acme,	Westmoreland,		1,898	480	149,159	97,854	200	310	178				30	14
Union,	Westmoreland,		80	210	28,075	18,523	70	243	46			11	125	8
Total and average,			1,978	690	177,234	116,377	270	276.5	22.4			11	155	22
Painter & Fogg.														
Clare,	Westmoreland,		30		1,452	1,075	50	55	18					2
Hester,	Westmoreland,		156		70,720	15,550	50	209	44					4
Total and average,			186		22,172	16,625	100	132	62					6

TABLE II—Continued.

Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules. Names of Operators and
Penn Gas Coal Co.														
Ayers Hollow, ...	Westmoreland, ..	43,597	924	299	44,820	....	......	182.5	54	......	1	....	....	5
Penn Gas No. 4, ...	Westmoreland, ..	43,596	924	299	44,819	....	......	182.5	54	1	1	....	....	4
Total and average, ...	....	87,193	1,848	598	89,639	....	......	182.5	108	1	2	....	....	9
Cochran Bros.														
Spring Grove, ...	Fayette, ...	....	180	320	39,119	29,196	50	298	59	......	......	150	....	3
Laughlin & Co., Ltd.														
Tyrone, ...	Fayette, ...	....	192	193	9,534	6,176	......	89	22	......	......	....	....	4
B. F. Keister & Co.														
Franklin, ...	Fayette, ...	12,430	152	225	31,628	22,425	50	305	40	......	1	....	....	5
Pennsville Coke Co.														
Pennsville, ...	Fayette, ...	....	1,144	547	57,008	42,705	92	282	79	......	......	340	....	4
American Sheet Steel Co.														
Scottdale, ...	Fayette, ...	....	....	....	36,388	....	......	300	27	......	1	....	....	9
J. R. Stauffer & Co.														
Dexter, ...	Fayette, ...	....	....	202	20,049	15,324	40	250	24	......	......	4	47	4
Mt. Pleasant Coke Co.														
Boyer, ...	Westmoreland, ..	....	120	200	13,433	8,742	120	45	130	......	......	....	....	10

J. W. Shields. Osceola,	Allegheny,	161,222	2,181	....	163,303	....	......	305	198	1	......	575	....	11
Bowman Bros. Bowman,	Allegheny,	....	....	16,800	16,800	....	......	299	30	......	......	....	....	3
R. B. Macintosh. Amyvllie,	Westmoreland,	46,184	....	1,253	47,437	....	......	225	70	......	1	25	....	5
J. W. Overholt. Emma,	Westmoreland,	....	....	346	22,954	16,709	36	298	18	......	......	....	....	9
Grand total and average,	....	1,476,447	139,519	85,553	8,172,143	4,360,559	8,778	245.27	10,755	45	53	13,790	8,783	1,165

TABLE II—Continued.

Names of Operators.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
H. C. Frick Coke Co.,	West'd & Fay.,	53	2,145	52	4,204	6,209	15	2	....	63	5,196	29	16,085	7,041	5	8
Pittsburg Coal Co.,	Westmoreland,	14	474	21	2,695	3,169	....	1	4	35	3,168	10	3,306	2,746	10	3
S. W. C. C. Co.,	Westmoreland,	15	392	12	702	1,094	5	....	....	10	2,039	7	9,778	9,737	1	2
Hecla Coke Co.,	Westmoreland,	4	100	8	920	1,020	....	....	....	5	410	8	7,000	2,700	......	......
Continental Coke Co.,	Westmoreland,	....	....	4	250	250	1	....	....	....	....	2	300	220	......	1
Bessemer Coke Co.,	Westmoreland,	....	....	4	105	105	....	....	....	5	85	1	236	180	......	......
W. J. Rainey,	Westmoreland,	....	....	4	330	330	1	....	....	4	155	3	940	122	......	1
Painter & Fogg,	Westmoreland,	....	....	2	105	105	....	....	....	1	2	....	....	....	......	......
Penn Gas Coal Co.,	Westmoreland,	2	44	4	192	236	....	....	....	3	225	1	243	20	......	......
Cochran Bros.,	Fayette,	1	25	1	50	75	....	....	....	....	....	....	....	....	......	......
Laughlin & Co., Ltd.,	Fayette,	1	42	1	48	90	....	....	....	3	45	....	....	....	......	......
B. F. Keister & Co.,	Fayette,	....	....	1	10	10	....	....	....	....	....	....	....	....	......	......
Pennsville Coke Co.,	Fayette,	2	60	2	80	140	1	....	....	2	48	2	640	500	......	......
American Sheet Steel Co.,	Fayette,	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......
J. R. Stauffer Co.,	Fayette,	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......
Mt. Pleasant Coke Co.,	Westmoreland,	....	....	1	30	30	....	....	....	....	....	....	....	....	......	......
J. W. Shields,	Allegheny,	4	400	2	300	700	....	....	....	5	800	1	200	20	1	......
Bowman Bros,	Allegheny,	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......
R. B. Macintosh,	Westmoreland,	1	70	....	....	70	....	....	....	....	....	1	450	450	......	......
J. W. Overholt,	Westmoreland,	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......
Grand total,	....	107	3,750	119	10,021	13,633	23	3	4	136	12,173	65	39,172	23,736	17	15

TABLE III—Showing the number of each class of employes at each colliery in the Eleventh Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
H. C. Frick Coke Co.																		
Alverton No. 1,	Westmoreland,	1	......	113	7	13	3	6	143	2	3	23	......	108	2	......	118	261
Alverton No. 2,	Westmoreland,	1	......	43	3	5	1	2	55	1	......	......	......	36	1	......	38	93
Bessemer Nos 1 and 2,	Westmoreland,	1	......	60	8	8	1	......	78	1	2	2	......	69	1	......	75	153
Buckeye,	Westmoreland,	1	1	127	3	16	3	15	166	1	5	5	......	133	3	......	147	313
Calumet,	Westmoreland,	1	2	155	11	18	1	6	194	3	4	5	......	107	2	......	121	315
Central,	Westmoreland,	1	2	120	5	12	5	15	160	1	4	7	......	61	2	......	75	235
Diamond,	Fayette,	1	......	20	2	3	......	1	27	......	1	......	......	35	2	......	38	65
Enterprise,	Westmoreland,	1	......	22	2	4	......	......	29	1	......	......	......	20	1	......	22	51
Jimtown,	Fayette,	1	......	70	8	9	1	8	97	1	2	5	......	70	2	......	80	177
Mutual No. 2,	Westmoreland,	1	......	51	2	5	2	......	61	......	1	......	......	......	......	1	2	63
Mutual No. 3,	Westmoreland,	1	1	39	2	7	......	......	50	1	2	3	......	42	2	......	50	100
Mutual No. 4,	Westmoreland,	1	......	33	2	2	......	......	38	......	1	......	......	......	2	3	6	44
Mammoth shaft,	Westmoreland,	1	3	192	12	22	4	6	240	1	6	7	......	130	2	......	146	386
Mammoth slope,	Westmoreland,	1	1	95	5	10	1	3	116	1	2	3	......	60	1	......	67	183
Mullin,	Westmoreland,	1	......	37	2	4	......	1	45	1	1	3	......	29	3	......	37	82
Painter,	Fayette,	1	......	75	6	9	1	3	95	......	4	1	......	126	2	......	133	228
Rist,	Fayette,	1	1	132	6	18	1	6	165	2	7	5	......	167	2	......	183	348
Ruff,	Westmoreland,	1	......	55	1	4	......	2	63	......	......	3	......	51	......	......	54	117
Standard shaft,	Westmoreland,	2	4	400	50	42	9	4	511	4	11	12	1	360	4	......	392	903
Standard slope,	Westmoreland,	1	1	125	5	11	2	1	146	......	2	3	......	38	......	......	43	189
Sunrise,	Westmoreland,	1	......	40	4	5	1	......	51	......	1	1	......	46	1	......	49	100
Summit,	Fayette,	1	......	40	3	9	......	......	53	1	1	1	......	47	2	......	52	105

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Tip Top,	Fayette,	1	......	55	2	8	......	......	66	1	1	......	......	43	......	......	45	111
United,	Westmoreland,	1	2	176	22	15	7	15	238	1	4	8	......	137	2	......	152	390
Valley,	Fayette,	1	1	101	5	13	6	......	127	1	3	4	......	100	3	......	111	238
White,	Fayette,	1	......	80	5	11	......	2	99	1	2	1	......	80	2	......	86	185
Total and average,	....	27	19	2,456	183	283	49	96	3,113	26	70	82	1	2,095	44	4	2,322	5,435
Pittsburg Coal Co.																		
Big Chief,	Westmoreland,	1	1	75	2	8	1	3	91	1	2	1	......	6	1	7	17	108
Euclid,	Westmoreland,	1	2	95	1	9	2	13	123	......	2	4	......	......	1	6	13	136
Eureka,	Westmoreland,	1	......	100	....	11	4	5	121	......	2	3	......	......	1	11	17	138
Guffey,	Westmoreland,	1	1	75	2	10	1	1	91	1	2	......	......	......	1	7	11	102
Ocean No. 1,	Westmoreland,	1	1	90	4	14	2	10	122	1	4	8	......	......	1	13	27	149
Port Royal No. 1,	Westmoreland,	1	2	70	2	6	1	12	94	......	3	6	......	15	1	10	35	129
Port Royal No. 2,	Westmoreland,	1	1	80	2	8	1	8	101	......	......	5	......	......	......	6	11	112
Shaner slope,	Westmoreland,	1	1	90	3	8	3	9	115	1	3	5	......	......	1	8	18	133
Waverly,	Westmoreland,	1	......	90	....	9	2	7	109	......	2	4	......	5	1	9	21	130
Yough slope,	Westmoreland,	1	1	75	....	8	3	8	96	......	4	5	......	......	......	12	21	117
Total and average,	....	10	10	840	16	91	20	76	1,063	4	24	41	......	25	8	89	191	1,254

S. W. C. C. Co.																		
South West No. 1, A,	Westmoreland,	2	2	224	11	23	3	20	285	2	3	10	......	193	3	......	211	496
South West No. 1, B,	Westmoreland,	1	1	112	5	11	2	9	141	1	2	5	......	96	1	......	105	246
South West No. 2,	Westmoreland,	1	1	131	7	13	1	6	160	1	2	3	......	114	2	......	122	282
South West No. 3,	Westmoreland,	1	1	107	7	13	......	4	133	1	2	5	1	104	2	......	115	248
South West No. 4,	Westmoreland,	1	1	80	4	6	......	5	97	1	2	3	......	79	2	......	87	181
Total and average,	....	6	6	654	34	66	6	44	816	6	11	26	1	586	10	......	640	1,456
Hecla Coke Co.																		
Hecla No. 1,	Westmoreland,	1	1	108	2	20	9	11	152	2	5	7	......	83	3	......	100	252
Hecla No. 2,	Westmoreland,	1	2	222	7	34	14	13	293	2	6	7	......	175	4	......	194	487
Total and average,	....	2	3	330	9	54	23	24	445	4	11	14	......	258	7	......	294	739
Continental Coke Co.																		
Marguerite No. 1,	Westmoreland,	1	......	78	1	6	2	4	92	1	1	2	......	45	1	......	50	142
Marguerite No. 2,	Westmoreland,	1	1	157	2	14	4	9	188	1	3	5	......	89	3	......	101	289
Total and average,	....	2	1	235	3	20	6	13	280	2	4	7	......	134	4	......	151	431
Bessemer Coke Co.																		
Empire,	Westmoreland,	1	......	50	6	6	2	1	66	1	2	2	......	50	3	......	58	124
Humphrey,	Westmoreland,	1	......	50	....	6	2	2	61	1	3	3	......	55	2	......	64	125
Total and average,	....	2	......	100	6	12	4	3	127	2	5	5	......	105	5	......	122	249
W. J. Rainey,																		
Acme,	Westmoreland,	1	1	94	3	8	......	3	110	1	1	5	......	56	5	......	68	178
Union,	Westmoreland,	1	......	24	....	3	......	1	29	1	1	1	......	12	2	......	17	46
Total and average,	....	2	1	118	3	11	......	4	139	2	2	6	......	68	7	......	85	224
Painter & Fogg.																		
Clare,	Westmoreland,	......	......	6	....	2	......	1	9	1	1	1	......	6	......	......	9	18
Hester,	Westmoreland,	1	......	18	....	2	......	1	22	1	1	1	......	18	1	......	22	41
Total and average,	....	1	......	24	....	4	......	2	31	2	2	2	......	24	1	......	31	62
Penn Gas Coal Co.																		
Penn Gas No. 4,	Westmoreland,	......	1	34	....	4	......	5	44	......	1	3	......	......	......	6	10	54
Ayers Hollow,	Westmoreland,	1	1	34	....	4	......	4	44	1	1	3	......	......	......	5	10	54
Total and average,	....	1	2	68	....	8	......	9	88	1	2	6	......	......	......	11	20	108
Cochran Bros.																		
Spring Grove,	Fayette,	1	......	30	1	3	......	......	35	1	1	......	......	20	2	......	24	59
Laughlin & Co., Ltd.																		
Tyrone,	Fayette,	1	......	8	1	1	......	......	11	1	1	1	......	5	......	2	10	21
B. F. Keister & Co.																		
Franklin,	Fayette,	1	......	18	....	3	......	1	23	1	......	1	......	15	......	......	17	40

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
Pennsville Coke Co. Pennsville,	Fayette,	1	......	33	2	5	......	......	41	......	1	2	......	33	2	......	38	79
American Sheet Steel Co. Scottdale,	Fayette,	1	......	18	....	4	1	1	25	......	......	......	......	......	......	2	2	27
J. R. Stauffer & Co., Dexter,	Fayette,	1	......	11	1	2	......	......	15	......	......	......	......	9	......	......	9	24
Mt. Pleasant Coke Co. Boyer,	Westmoreland,	1	......	49	....	5	1	5	61	1	1	2	......	63	2	......	69	130
J. W. Shields. Osceola,	Allegheny,	1	11	141	....	12	5	10	170	......	3	5	2	......	5	13	28	198
Bowman Bros. Bowman,	Allegheny,	1	......	22	1	2	......	......	26	......	......	......	......	......	2	2	4	30
R. B. Macintosh. Amyville,	Westmoreland,	1	......	55	2	4	......	......	62	......	1	1	......	......	......	6	8	70
J. W. Overholt. Emma,	Westmoreland,	1	......	8	....	1	......	......	10	......	......	......	......	8	......	......	8	18
Grand total,	....	64	43	5,218	262	591	115	288	6,581	53	139	201	4	3,445	100	131	4,073	10,654

TABLE III— —Continued.

Names of Operators.	County.	Number of Days Worked in Each Month.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
H. C. Frick Coke Co.,	Westm'd & Fay.,	19.42	21.84	24.69	24.69	24.92	22.84	24.42	24.15	23.15	25.10	25.84	22.84	284.34
Pittsburg Coal Co.,	Westmoreland,	13.57	12.97	11.82	10.78	16.78	15.30	19.05	17.59	16.08	18.29	13.15	9.87	175.25
S. W. C. C. Co.,	Westmoreland,	27	24	26	26	27	25	26	27	25	27	26	24.2	310.2
Hecla Coke Co.,	Westmoreland,	27	23	24	25	23.75	23	26	24.50	22	23.50	25	19	285.75
Continental Coke Co.,	Westmoreland,	27	24	26	26	26	25	26	27	25	27	26	23	308
Bessemer Coke Co.,	Westmoreland,	20.50	18.50	24.50	25	26.50	23.50	21	15	14.50	22	23.50	20.50	255
W. J. Rainey,	Westmoreland,	13.50	12	19	26	26.50	25	26	27	25	26.50	25	25	276.5
Painter & Fogg,	Westmoreland,	9.50	8	11.50	11	9.50	7.50	4.50	12	9	12	18.50	19	132
Penn Gas Coal Co.,	Westmoreland,	19	10	15.50	25	10	14	14	9	10	20	20	16	182.5
Cochran Bros.,	Fayette,	26	24	26	26	25	23	26	24	25	26	24	23	298
Laughlin & Co., Limited,	Fayette,	27	24	26	12	....	....	....	....	....	....	....	....	89
B. F. Keister & Co.,	Fayette,	27	24	26	26	25	23	26	25	26	27	25	25	305
Pennsville Coke Co.,	Fayette,	27	22	25	22	22	23	23	25	22	26	25	20	282
American Sheet Steel Co.,	Fayette,	27	24	26	23	27	24	25	27	25	25	26	21	300
J. R. Stauffer & Co.,	Fayette,	25	25	25	25	25	15	25	25	10	....	25	25	250
Mt. Pleasant Coke Co.,	Westmoreland,	....	....	....	....	....	....	....	....	....	....	20	25	45
J. W. Shields,	Allegheny,	26	24	26	26	25.5	25	24	27	25	27	24.5	25	305
Bowman Bros.,	Allegheny,	27	24	26	26	24	22	24	26	26	26	26	22	299
R. B. Macintosh,	Westmoreland,	21.4	17.4	19	17.5	17.4	18.6	21	18	21.1	17.4	19.6	16.6	225
J. W. Overholt,	Westmoreland,	27	24	26	26	25	23	26	24	24	26	25	22	298
Grand total and average,	....	21.84	19.33	21.70	21.44	20.34	18.88	20.34	20.21	18.69	20.08	22.15	20.35	245.27

TABLE IV—List of fatal accidents that occurred in and about the mines of the Eleventh Bituminous District for the year ending December 31, 1901.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan. 14	Andrew Steffle,	Bohemian,	Miner,	16	S.	....	....	Standard shaft,	Westmoreland,	Fatally injured by mine cars.
14	Joseph Zaranski,	Hungarian,	Miner,	24	S.	....	....	Yough slope,	Westmoreland,	Instantly killed by coming in contact with electric wires.
19	Isaac Chapman,	American,	Driver,	35	M.	1	3	Rist,	Fayette,	Fatally injured; crushed between mine cars and pillar.
25	John Quinn,	American,	Trip rider,	18	S.	....	....	Valley,	Fayette,	Killed instantly by mine cars.
29	Clarence Fox,	American,	Driver,	35	M.	1	2	Standard shaft,	Westmoreland,	Fatally injured by mine cars.
Feb. 5	John Pettock,	Slav,	Miner,	50	M.	1	4	Marguerite No. 2,	Westmoreland,	Fatally injured by a fall of horseback roof.
14	Kasper Caperell,	Italian,	Miner,	70	M	1	2	South West No. 4	Westmoreland,	Fatally burned by an explosion of coal dust, caused by blown out shot.
18	Charles Phisto,	Italian,	Miner,	44	S.	....	....	Bessemer No. 2,	Westmoreland,	Killed instantly by a fall of roof.
18	Even Harkin,	American,	Driver,	35	M.	1	4	Calumet,	Westmoreland,	Fatally injured by being crushed between car and pillar.
April 1	Peter Carshock,	Austrian,	Miner,	40	M.	1	5	Calumet,	Westmoreland,	Fatally injured by a fall of roof.
6	Stephen Barne,	Slav,	Oven charger,	21	S.	....	....	United,	Westmoreland,	Fatally injured by being struck by locomotive.
16	Frank Smith,	Pole,	Miner,	30	S.	....	....	Alverton No. 2,	Westmoreland,	Killed instantly by a fall of slate.
17	Joseph Bush,	Pole,	Miner,	48	M.	1	2	S. West No. 1, A,	Westmoreland,	Killed instantly by a fall of roof.
June 10	John Peebler,	Scotch,	Roadman,	38	M.	1	2	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
10	Anton Stickle,	German,	Pipeman,	44	M.	1	1	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
10	Frank Davenport,	American,	Roadman,	37	M.	1	....	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
10	Jerry Daley,	Irish,	Laborer,	30	M.	1	1	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
10	Michael Roy,	Scotch,	Mine foreman,	39	M.	1	1	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
10	Dennis Wardley,	English,	Mine foreman,	57	M.	1	1	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
10	Samuel Hadley,	English,	Ast. foreman,	38	M.	1	1	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
10	Peter Marchando,	Italian,	Boss driver,	29	M.	1	1	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
10	Taylor Gunsalius,	American,	Laborer,	54	M.	1	....	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
10	Taylor Gunsallus, Jr.,	American,	Roadman,	28	M.	1	....	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
10	John Keck,	American,	Mine foreman,	29	M.	1	4	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
10	David James,	Welsh,	Machine runner.	32	M.	1	4	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
10	John Conto,	Slav,	Machine boss,	27	M.	1	....	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
10	Barney Bald,	Italian,	Coal loader,	35	M.	1	5	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.

	10	William Allison, ...	American, .	Ast. mine supt.	52	M.	1	1	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
	10	William McCune, ...	American, .	Mine supt., ..	53	M.	1	2	Port Royal No. 2,	Westmoreland,	Killed by an explosion of fire damp.
	10	Fred. Krugar, ...	German, ...	Roadman, ...	29	M.	1	....	Port Royal No. 2,	Westmoreland,	Fatally injured by an explosion of fire damp.
	10	H. E. Beveridge, ...	American, .	Coal loader, ..	28	S.	....	....	Port Royal No. 2,	Westmoreland,	Fatally injured by an explosion of fire damp.
	10	Thomas Smith, ...	English, ...	Mine foreman,	56	M.	1	....	Port Royal No. 2,	Westmoreland,	Fatally injured by an explosion of fire damp.
July	26	John Bunetsky, ...	French, ...	Miner, ...	46	M.	1	4	Penn Gas No. 4,	Westmoreland,	Fatally injured by a fall of coal and slate.
Aug.	15	Parnick Wasil, ...	Pole, ...	Miner, ...	29	M.	1	1	Standard slope, ..	Westmoreland,	Killed almost instantly by a fall of roof.
	14	Louis Griffin, ...	Russian, ...	Miner, ...	35	M.	1	5	Hecla No. 2, ...	Westmoreland,	Fatally injured; caught between mine car and timber on heading.
Sept.	27	John McKitty, ...	Slav, ...	Miner, ...	45	M.	1	4	Marguerite No. 2,	Westmoreland,	Fatally injured by a fall of slate and coal.
	30	John Telemack, ...	Pole, ...	Miner, ...	26	S.	....	....	Standard shaft, ..	Westmoreland,	Instantly killed by a fall of roof.
Oct.	16	William Burkey, ...	American, .	Miner, ...	29	M.	1	3	Mutual No. 2, ..	Westmoreland,	Instantly killed by a fall of roof.
	21	Robert Smith, ...	American, .	Miner, ...	45	S.	....	....	Osceola, ...	Allegheny, ...	Fatally injured by a fall of slate.
	25	Zepro Shaftzis, ...	Austrian, ..	Miner, ...	44	M.	1	6	Calumet, ...	Westmoreland,	Fatally injured by a fall of coal.
	26	Albert Shrinkle, ...	Slav, ...	Miner, ...	27	M.	1	....	Tip top, ...	Fayette, ...	Instantly killed by a fall of roof.
Nov.	2	Andrew Katmarchick,	Slav, ...	Coke drawer,	19	S.	....	....	Mammoth slope,	Westmoreland,	Instantly killed by being run over by larries on coke oven track.
	25	Andrew Stumpf, ...	Bohemian, .	Miner, ...	30	M.	1	....	Ruff, ...	Westmoreland,	Instantly killed by a fall of roof.
	30	Michael Sirene, ...	Slav, ...	Miner, ...	43	M.	1	....	Standard shaft, ..	Westmoreland,	Fatally injured by falling upon his dinner bucket.
Dec.	5	Martin Casper, ...	Slav, ...	Miner, ...	26	M.	1	1	Mammoth slope,	Westmoreland,	Instantly killed by a fall of roof.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Eleventh Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
Jan.	5	Jacob Shanks,	American,	Driver,	45	M.	Marguerite No. 2,	Westmoreland,	Injured by mine cars.
	7	Clarence Jones,	American,	Miner boy,	16	S.	Amyville,	Westmoreland,	Arm fractured, struck by a fall of slate.
	16	Ludwick Yannick,	Pole,	Miner,	36	M.	Franklin,	Fayette,	Injured internally by a fall of roof.
	17	Frank Frogner,	Bohemian,	Driver,	23	M.	South West No. 1, B,	Westmoreland,	Leg fractured between mine cars and pillar.
	31	Conrad Rinehart,	German,	Machine runner.	52	M.	Yough slope,	Westmoreland,	Leg fractured by fall of coal.
Feb.	14	Antonio Caparell,	Italian,	Miner,	19	S.	South West No. 4,	Westmoreland,	Burned by flame of blown out shot.
	22	Michael Rollick,	Slav,	Miner,	25	S.	Mutual No. 2,	Westmoreland,	Leg fractured by fall of slate.
March	2	Even Handley,	English,	Miner boy,	16	S.	Big Chief,	Westmoreland,	Leg fractured by a fall of slate.
	5	Berth Fillabaum,	American,	Driver,	25	M.	Humphrey,	Westmoreland,	Leg fractured by mine cars.
	30	Frank Lavan,	Pole,	Coal loader,	31	M.	Port Royal No. 1,	Westmoreland,	Shoulder dislocated and scalp wound by a post.
April	16	Michael Prepyla,	Pole,	Miner,	32	M.	Alverton No. 2,	Westmoreland,	Scalp wound by fall of slate.
	27	Joseph Moleski,	Pole,	Miner,	33	M.	Painter,	Fayette,	Shoulder and ribs fractured; fall of slate.
May	10	Stephen Stepanska,	Pole,	Driver,	30	M.	South West No. 2,	Westmoreland,	Breast, shoulders and head bruised; kicked by mule.
	27	Edwin Ewing,	American,	Driver,	37	M.	Scottdale,	Fayette,	Severely injured by falling in front of cars.
June	17	Fuller Cover,	American,	Driver,	22	S.	Calumet,	Westmoreland,	Body bruised and injured internally between cars and pillar.
	22	Peter Gailes,	Slav,	Miner,	25	M.	Alverton No. 1,	Westmoreland,	Arm cut and otherwise injured by fall of roof.
	22	Michael Blashkinski,	Slav,	Miner,	21	S.	Alverton No. 1,	Westmoreland,	Body bruised by fall of roof.
	25	S. Susura,	Austrian,	Laborer,	18	S.	Calumet,	Westmoreland,	Hand crushed between mine car and pillar.
	25	Michael Brown,	American,	Driver,	19	S.	Calumet,	Westmoreland,	Foot bruised, caught between mine car and bottom.
	26	Abel Booth,	American,	Miner,	19	S.	Penn Gas No. 4,	Westmoreland,	Severely injured; caught between mine cars.
	28	Peter Brunnelli,	Italian,	Miner boy,	15	S.	Eureka,	Westmoreland,	Injured by fall of slate.
	29	S. D. Trumbath,	American,	Driver,	30	M.	Painter,	Fayette,	Foot bruised between car and floor of mine.
July	10	James Sollomon,	Italian,	Miner,	26	M.	Ocean No. 1,	Westmoreland,	Foot bruised by fall of slate.
	11	Andrew Zeik,	Pole,	Miner,	35	M	S. West No. 1, B,	Westmoreland,	Breast and shoulder bruised by fall of slate.

	18	Joseph Manri,	Austrian,	Coal loader,	40	M.	Euclid,	Westmoreland,	Breast bruised by fall of slate.
	18	Geo. O. Hargress,	Austrian,	Miner,	30	S.	Euclid,	Westmoreland,	Injured by fall of slate.
	19	Oscar Paegart,	German,	Miner,	17	S.	Eureka,	Westmoreland,	Leg fractured by fall of slate.
Aug.	5	Bartlett Somers,	Irish,	Driver,	28	M.	Central,	Westmoreland,	Injured between mine cars.
	7	Peter Luciano,	Italian,	Coal loader,	37	M.	Euclid,	Westmoreland,	Ribs dislocated by a post.
	9	Michael Steff,	Slav,	Miner,	42	M.	Bessemer No. 2,	Westmoreland,	Back sprained while riding between cars.
	10	L. D. Kuntz,	American,	Driver,	22	S.	Mammoth shaft,	Westmoreland,	Collar bone fractured by mine cars.
Sept.	2	James Marshall,	Scotch,	Timberman,	47	M.	Marguerite No. 2,	Westmoreland,	Wrist fractured by falling into shaft.
	12	John Stos,	German,	Miner,	38	S.	Waverly,	Westmoreland,	Hip bruised by falling on the bumper of car.
	13	Henry Tepper,	German,	Miner,	43	M.	Eureka,	Westmoreland,	Foot bruised by fall of slate.
	21	Frank Keiffer,	German,	Miner,	38	S.	Guffey,	Westmoreland,	Leg fractured by fall of coal.
	25	Roch Vinergel,	Pole,	Coal loader,	40	M.	Euclid,	Westmoreland,	Collar bone fractured by fall of slate.
Oct.	1	Thomas Pawteck,	Slav,	Miner,	25	S.	Enterprise,	Westmoreland,	Arm fractured by a car.
	5	Stephen Gowolish,	Slav,	Laborer,	23	S.	Bessemer No. 2,	Westmoreland,	Leg fractured; knocked down by truck.
	7	Allison Hoenshell,	American,	Laborer,	23	M.	Eureka,	Westmoreland,	Leg fractured; caught between cars.
	9	John Dankanistck,	Austrian,	Driver,	27	S.	Ocean No. 1,	Westmoreland,	Shoulder bruised between cars and pillar.
	15	Joseph Fontanna,	Austrian,	Miner,	36	M.	Eureka,	Westmoreland,	Thigh fractured by a fall of roof.
	17	David Forsythe,	American,	Driver,	28	M.	Enterprise,	Westmoreland,	Ankle sprained, caught between mine cars.
	26	George Pike,	American,	Driver,	40	M.	South West No. 2,	Westmoreland,	Rib fractured; fell in front of cars.
Nov.	2	Albert King,	American,	Laborer,	16	S.	Yough slope,	Westmoreland,	Arm crushed by cars.
	8	Frank Dobritz,	German,	Miner boy,	16	S.	Eureka,	Westmoreland,	Leg fractured by fall of slate.
	12	Vadzlan Dombrosky,	Austrian,	Miner,	27	M.	Calumet,	Westmoreland,	Ribs fractured and body bruised by car.
	12	John Perko,	Austrian,	Miner,	45	M.	United,	Westmoreland,	Body bruised by fall of slate.
	20	John Zipcback,	Slav,	Miner,	24	S.	Alverton No. 1,	Westmoreland,	Scalp wound by fall of roof.
	26	Elias Slosses,	Pole,	Miner,	42	M.	S. West No. 1, B,	Westmoreland,	Back and hip bruised between cage and shaft.
Dec.	5	Michael Wilcheck,	Pole,	Miner,	36	M.	Mammoth shaft,	Westmoreland,	Shoulders and face bruised between car and pillar.
	12	Ray Reanna,	Italian,	Coal loader,	44	M.	Shaner slope,	Westmoreland,	Leg fractured by fall of slate.
	21	John Dolnack,	Slav,	Miner,	67	M.	Ayers Hollow,	Westmoreland,	Foot and ankle injured by fall of coal.
	28	Michael Cutler,	Pole,	Miner,	39	M.	Sterling No. 2,	Fayette,	Two ribs fractured by a fall of roof.

Twelfth Bituminous District.

ARMSTRONG, JEFFERSON, CLEARFIELD, CAMBRIA AND INDIANA COUNTIES.

Punxsutawney, Pa., March 7, 1902.

Hon. James W. Latta, Secretary of Internal Affairs, Harrisburg, Pa.:

Sir: I have the honor of submitting the first annual report of this the newly formed Twelfth Bituminous District, for the year ending December 31, 1901.

From the tables it will be noted that the fatal accidents numbered twenty, and the non-fatal sixty, and in some cases these accidents were due to carelessness on the part of the victims themselves.

The general condition of the mines as a whole has been good; the mines have worked reasonably well during the year, and it will be noted that more than half of the production of coal in the district is cut by machines, the number of which is being steadily increased. A summary of the statistics, and the different tables will be found in their appropriate places in the report, which is respectfully submitted.

Yours truly,

R. Hampson,
Inspector.

Summary of Statistics.

Number of mines in the district,	70
Number of mines operated during the year,	65
Number of tons of coal produced,	5,173,992
Number of tons of coal produced by machinery,	2,941,459
Total production of coke in tons,	527,837
Number of coke ovens,	1,607
Number of days worked,	9,145
Average number of days worked during the year,	169
Number of persons employed inside,	6,898
Number of persons employed outside,	726
Total number employed,	7,624
Number of fatal accidents,	20
Number of non-fatal accidents,	60
Number of tons produced per fatal accident,	258,699

Number per non-fatal accident, ...	86,233
Number of persons employed per fatal accident, ...	381
Number of persons employed per non-fatal accident,	127
Number of wives made widows by accidents, ...	13
Number of children orphaned by accidents, ...	34

TABLE A—Showing the Production of Coal, Number of Persons Employed by each Company, Number of Tons Produced per Person Employed During the Year 1901, and the Average Number of Tons Produced per Employe.

Names of Companies.	Number of tons produced.	Number of persons employed.	Number of tons produced per employe.
Rochester and Pittsburg Coal and Iron Co.,	2,885,391	3,133	920
Berwind-White Coal Mining Co.,	370,761	639	580
Jno. McLeavy & Co.,	88,410	161	549
Clearfield Bituminous Coal Corporation,	260,790	621	419
Urey Ridge Coal Co.,	96,829	187	517
Glenwood Coal Co.,	111,936	261	428
Indiana Coal Co.,	61.466	175	351
Beech Creek Coal and Coke Co.,	89.818	161	557
Clearfield and Cush Creek Coal and Coke Co.,	20,325	53	383
Philadelphia Coal and Coke Co.,	37,316	92	405
Irvona Coal Co.,	132,990	241	551
Blaine Run Coal Co.,	41,600	120	263
S. Hegarty's Sons,	51,966	104	499
Peale, Peacock & Kerr,	116,712	260	448
S. A. Rinn,	....	....	....
Kurtz & Rinn,	....	160	....
W. A. Preston,	34,188	53	645
Jefferson and Clearfield Coal and Iron Co.,	....	....	....
H. A. Bowers,	6,899	53	130
Reakirt Bros. & Co.,	56,260	64	879
Logan Coal Co.,	7,077	25	283
Gypsy Coal Co.,	....	....	....
Ellsworth-Dunham Coal Co.,	....	....	....
Cowanshannock Coal Co.,	464,010	564	822
Burnside Coal Co.,	40,888	69	592
Clearfield and Cambria Coal and Coke Co.,	11,572	39	296
Mosher & Jose,	1,450	23	63
Coalport Coal Co.,	6,750	33	204
Weaver & Ettla,	....	....	....
Glasgow Coal Co.,	2,273	18	126
Joseph Smittle,	14,539	29	500
W. J. Nicolls,	40,656	98	414
Fred. Bland,	28,937	34	851
Harbison-Walker Co.,	19,946	26	746
Bellwood Coal Co.,	28,879	63	458
Max Frick,	43,358	65	667
Total,	5,173,992	7,624	....

TABLE B—Number of Employes, Number of Tons of coal produced, number of tons produced per Fatal Accidents, Number of Non-Fatal accidents, Number of tons per Non-Fatal accidents, and number of tons per accident.

Name of Operators.	Number of persons employed.	Number of tons of coal produced.	Number of fatal accidents.	Number of tons per fatal accident.	Number of non-fatal accidents.	Number of tons per non-fatal accident.	Number of tons per accident.
Rochester and Pittsburg Coal and Iron Co.,	3,133	2,885,391	12	240,449	42	68,699	53,433
Berwind-White Coal Mining Co.	639	370,761	1	370,761	8	46,345	41,195
John McLeavy & Co.,	161	88,410					
Clearfield Bituminous Coal Corporation,	621	260,790					
Urey Ridge Coal Co.,	187	96,829			2	48,414	48,414
Glenwood Coal Co.,	261	111,936					
Indiana Coal Co.,	175	61,466					
Beech Creek Coal and Coke Co.,	161	89,818					
Clearfield and Cush Creek C. & C. Co.,	53	20,325					
Philadelphia Coal and Coke Co.,	92	37,316					
Irvona Coal Co.,	241	132,990	2	66,495	1	132,990	44,330
Blaine Run Coal Co.,	120	41,600					
S. Hegarty's Sons,	104	51,966					
Peale, Peacock & Kerr,	260	116,712	1	116,712	1	116,712	58,356
S. A. Rinn,							
Kurtz & Rinn,	160				1		
W. A. Preston,	53	34,188					
Jefferson & Clearfield Coal and Iron Co.,			1				
H. A. Bowers,	53	6,899					
Reakirt Bros. & Co.,	64	56,260					
Logan Coal Co.,	25	7,077					
Gipsy Coal Co.,							
Ellsworth-Dunham Coal Co.,							
Cowanshannock Coal Co.,	564	464,010	1	464,010	1	464,010	232,005
Burnside Coal Co.,	69	40,888	1	40,888	1	40,888	20,444
Clearfield and Cambria Coal and Coke Co.,	39	11,572					
Mosher & Jose,	23	1,450					
Coalport Coal Co.,	33	6,750					
Weaver & Ettla,							
Glasgow Coal Co.,	18	2,273					
Joseph Smittle,	29	14,539					
W. J. Nicolls,	98	40,656	1	40,656	2	20,328	13,552
Fred. Bland,	34	28,937					
Harbeson-Walker Co.,	26	19,946					
Bellwood Coal Co.,	63	28,879					
Max Frick,	65	43,358			1	43,358	
Total,	7,624	5,173,992	20		60		

TABLE D—Giving Name of Mine, Kind of Haulage, Kind of Opening, Pick or Machine Mining, Type of Machine, and Power used to Operate Machines.

Name of Mine.	Kind of Opening.	Method of Haulage.	Pick or Machine.	Type of Machine.	Motive Power Used.
Walston No. 3,	Slope,	Rope,	Pick and machine,	Harrison, Sullivan and Ingersoll-Sargent,	Compressed air.
Walston No. 4,	Drift,	Rope,	Pick and machine,	Harrison, Sullivan and Ingersoll-Sargent,	Compressed air.
Walston No. 5,	Drift,	Mules and locomotive,	Pick and machine,	Harrison, Sullivan and Ingersoll-Sargent,	Compressed air.
Walston No. 6,	Drift,	Electric motor,	Pick and machine,	Harrison, Sullivan and Ingersoll-Sargent,	Compressed air.
Elk Run shaft,	Shaft,	Mules,	Pick and machine,	Harrison, Sullivan and Ingersoll-Sargent,	Compressed air.
Adrian No. 2,	Slope,	Rope,	Pick and machine,	Harrison, Sullivan and Ingersoll-Sargent,	Compressed air.
Adrian No. 4,	Drift,	Mules,	Pick and machine,	Harrison, Sullivan and Ingersoll-Sargent,	Compressed air.
Florence,	Slope,	Rope,	Pick and machine,	Harrison, Sullivan and Ingersoll-Sargent,	Compressed air.
Eleanora No. 1,	Drift,	Mules,	Pick and machine,	Harrison, Sullivan and Ingersoll-Sargent,	Compressed air.
Eleanora No. 2,	Drift,	Rope,	Pick and machine,	Harrison, Sullivan and Ingersoll-Sargent,	Compressed air.
Eleanora No. 3,	Drift,	Rope,	Pick.		
West Eureka No. 4,	Slope,	Rope.			
West Eureka No. 6,	Slope,	Rope,		Harrison,	Compressed air
West Eureka No. 10,	Drift,	Rope,	Pick.		
West Eureak No. 11,	Drift,	Mules,	Pick.		
West Eureka No. 13,	Drift,	Mules,	Pick.		
Conrad,	Drift,	Mules,	Pick.		
Shollar,	Slope,	Rope,	Pick.		
Canoe Ridge No. 1,	Drift,	Electric motor,	Pick and machine,	Harrison,	Compressed air.
Canoe Ridge No. 2,	Drift,	Electric motor,	Pick and machine,	Harrison,	Compressed air.
Canoe Ridge No. 3,	Drift,	Electric motor,	Pick and machine,	Harrison,	Compressed air.
Gazzam,	Drift,	Mules,	Pick.		
Urey No. 1,	Drift,	Mules,	Pick.		
Urey No. 2,	Drift,	Mules,	Pick.		
Urey No. 3,	Drift,	Mules,	Pick.		
Glenwood No. 6,	Drift,	Electric motor,	Pick and machine,	Morgan-Gardner,	Electricity.
Glenwood No. 8,	Slope,	Chain,	Pick.		
Glenwood No. 10,	Drift,	Mules,	Pick.		
Indiana No. 1,	Drift,	Rope,	Pick.		
Indiana No. 2,	Drift,	Mules,	Pick.		
Indiana No. 3,	Drift,	Mules,	Pick.		
Indiana No. 4,	Drift,	Mules,	Pick.		
Arcadia No. 1,	Drift,	Mules,	Pick.		
Arcadia No. 2,	Drift,	Mules,	Pick.		
Arcadia No. 3,	Drift,	Mules,	Pick.		
Cush Creek No. 1,	Drift,	Mules,	Pick.		
Cush Creek No. 2,	Drift,	Mules,	Pick.		
National No. 1,	Drift,	Mules,	Pick.		
National No. 2,	Drift,	Mules,	Pick.		
Irvona No. 3,	Drift,	Rope and locomotives,	Pick.		

TABLE D—Continued.

Name of Mine.	Kind of Opening.	Method of Haulage.	Pick or Machine.	Type of Machine.	Motive Power Used.
Irvona No. 4,	Drift,	Mules,	Pick.		
Blaine Run No. 1,	Drift,	Mules,	Pick.		
Blaine Run No. 2,	Drift,	Mules,	Pick.		
Oakland No. 1,	Drift,	Rope,	Pick.		
Oakland No. 2,	Drift,	Mules,	Pick.		
Bloomington No. 3,	Drift,	Mules,	Pick.		
Bloomington No. 4,	Drift,	Mules,	Pick.		
Bloomington No. 5,	Slope,	Rope,	Pick.		
Penn,	Drift,	Mules,	Pick.		
Sykes shaft,	Shaft,	Mules,	Pick and machine,	Harrison,	Compressed air.
Hillman,	Drift,	Mules,	Pick.		
Penn,	Drift,	Mules,	Pick.		
Fuller Run,	Drift,	Mules,	Pick.		
Gypsy,	Drift,	Mules,	Pick.		
Victor No. 11,	Drift,	Mules,	Pick.		
Yatesboro,	Drift,	Rope,	Pick.		
Burnside,	Drift,	Mules,	Pick.		
Clearfield,	Drift,	Mules,	Pick.		
Wilson Run,	Drift,	Mules,	Pick.		
Superior,	Drift,	Mules,	Pick.		
O'Shanter,	Drift,	Mules,	Pick.		
Glasgow,	Drift,	Mules,	Pick.		
Pleasant Hill,	Drift,	Mules,	Pick.		
Mountaindale	Drift,	Mules,	Pick.		
Blands,	Drift,	Mules,	Pick.		
Harbison-Walker,	Drift,	Mules,	Pick.		
Great Bend,	Drift,	Mules,	Pick.		
Fricks,	Drift,	Mules,	Pick.		

NOTE—Giving Approximate Number of Tons Mined by Machines, the Name and Number of Each Kind of Machine in Use, the Number of Machines Using Compressed Air for Power, the Number Using Electricity for Power, Also the Height of the Thickest Vein, and of the Thinnest Vein Where Machines are in Use.

Name of Operator.	Number of tons mined.	Name and Number of Machines Used.		Number using compressed air.	Number using electricity.	Height of thickest and thinnest vein where machines are in use.
Rochester and Pittsburg Coal and Iron Co.,	2,642,826	Harrison,	73	73	....	7 ft. 6 in. to 3 ft. 6 in.
		Sullivan,	46	46	....	
		Ingersoll-Sergent,	56	56	....	
Berwind-White Coal Mining Co.,	100,000	Sullivan,	5	5	....	7 ft. 0 in. to 5 ft. 0 in.
		Harrison,	12	12	....	
Clearfield Bituminous Coal Corporation,	154,515	Harrison,	12	12	......	4 ft. 0 in.
Glenwood Coal Co.,	44,018	Morgan-Gardner,	3	......	3	4 ft. 0 in.
Urey Ridge Coal Co.,	100	Morgan-Gardner,	1	......	1	4 ft. 0 in.
Total,	2,941,459		208	204	4	

TABLE E—Classification of Accidents.

	Killed or fatally injured.	Injured.
Falls of coal,	5	20
Falls of slate and roof,	11	14
By mine cars,	2	12
By explosion of gas,	....	1
By electric shocks,	1	1
By powder and dynamite explosions,	....	8
Miscellaneous causes,	1	4
Total,	20	60

TABLE G—Nationalities of Persons Killed and Injured.

	American.	English.	Irish.	Scotch.	Welsh.	Swedes.	Pole.	Slav.	Hungarian.	Italian.	Austrian.	Total.
Killed,	3	1	......	1	1	......	2	2	1	6	3	20
Injured,	15	4	1	5	2	4	6	4	2	16	1	60

TABLE F—Occupations of Persons Killed and Injured.

	Killed or fatally injured.	Injured.	Total.
Miners,	10	45	55
Drivers,	3	3	6
Machine cutters,	....	1	1
Scrapers,	2	2	4
Loaders,	3	2	5
Trackman,	1	....	1
Laborer,	1	....	1
Spragger,	....	3	3
Pumper,	....	1	1
Trapper,	....	1	1
Oiler,	....	1	1
School boy,	....	1	1
Total,	20	60	80

TABLE C—Showing method of ventilation, size of fan or furnace, volume of ventilation produced per minute, number of splits, quantity in each split, number of employes and quantity per employe.

Name of Mine.	Fan or Furnace.	Size of fan or furnace—feet.	Volume of air produced per minute.	Number of splits.	Volume of Air in Each Split.						Number of employes.	Cubic feet of air per employe.
					First.	Second.	Third.	Fourth.	Fifth.	Sixth.		
Walston No. 3,	Fan,	25	62,000	4	20,000	25,000	6,000	10,000			570	108
Walston No. 4,	Fan,	7	12,000	1	12,000						83	144
Walston No. 6,	Fan,	20	35,000	1	35,000						150	233
Elk Run shaft,	Fan,	20	64,000	1	64,000						150	426
Adrian,	Fan,	25	110,000	5	20,000	22,000	20,000	28,000	20,000		600	183
Florence,	Fan,	20	90,000	6	15,000	15,000	11,000	16,000	17,000	16,000	580	155
Eleanora No. 1,	Furnace,	5x5	6,300	1	6,300						30	210
Eleanora No. 2,	Fan,	25	104,000	4	26,000	24,000	20,000	26,000			602	172
Eleanora No. 3,	Fan,	20	40,000	2	26,000	14,000					150	266
West Eureka No. 4,	Fan,	20	60,000	2	40,000	20,000					91	659
West Eureka Nos. 1 and 6,	Fan,	20	50,000	3	18,000	12,000	20,000				212	235
West Eureka No. 10,		8	28,000	2	18,000	10,000					145	193
West Eureka No. 11,	Furnace,	8x6	20,000	1	20,000						82	243
West Eureka No. 13,	Furnace,	8x6	26,000	2	18,000	8,000					47	553
Conrad,*											67	
Shollar,		12	60,000	1	60,000						80	750
Canoe Ridge No. 1,	Furnace,	6x5	20,000	1	20,000						80	250
Canoe Ridge No. 2,	Fan,	8	25,000	2	15,000	10,000					200	125
Canoe Ridge No. 3,	Fan,	8	20,000	1	20,000						86	231
Gazzam,	Fan,	8	22,000	2	12,000	10,000					111	198
Urey No. 1,	Furnace.	7x6	16,000	2	10,000	6,000					66	242
Urey No. 2,	Furnace,	7x6	9,000	1	9,000						44	204
Urey No. 3,	Furnace.	7x6	24,000	2	14,000	10,000					68	352
Glenwood No. 6,	Fan,	10	40,000	4	12,000	8,000	10,000	10,000			161	248
Glenwood No. 8,	Fan,	10	18,000	1	18,000						15	1,200
Glenwood No. 10,	Furnace,	7x6	11,000	1	11,000						66	166
Indiana No. 1,	Fan,	8	20,000	2	14,000	6,000					88	227
Indiana No. 2,	Furnace,	5x6	6,000	1	6,000						28	214
Indiana No. 3,	Furnace,	6x6	2,000	1	2,000						10	200
Indiana No. 4,	Furnace,	6x6	9,000	2	5,000	4,000					33	272

TABLE C—Continued.

Name of Mine.	Fan or Furnace.	Size of fan or furnace.	Volume of air produced per minute.	Number of splits.	Volume of Air in Each Split. First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Number of employes.	Cubic feet of air per employe.
Arcadia No. 1,	Furnace,	7x6	9,000	1	9,000						54	166
Arcadia No. 2,	Furnace,	6x6	14,000	1	14,000						82	170
Arcadia No. 3,	Furnace,	6x6	8,000	1	8,000						15	533
Cush Creek No. 1,	Furnace,	6x6	13,000	1	13,000						42	309
Cush Creek No. 2,†											6	
National No 1,	Furnace,	6x6	20,000	2	12,000	8,000					66	303
National No. 2,	Furnace,	8x6	9,000	2	9,000						15	600
Irvona No. 3,	Fan,	10	24,000	3	10,000	6,000	6,000				178	134
Irvona No. 4,	Furnace,	6x6	10,000	1	10,000						14	714
Blaine Run No. 1,	Fan,	20	20,000	1	20,000						88	227
Blaine Run No. 2,	Furnace,	6x6	4,000	1	4,000						24	166
Oakland No. 1,	Fan,	10	30,000	2	10,000	20,000					83	361
Oakland No. 2,	Furnace,	6x6	10,000	1	10,000						11	909
Bloomington No. 3,	Fan,	20	25,000	2	15,000	10,000					35	
Bloomington No. 4,											75	333
Bloomington No. 5,	Fan,	10	30,000	2	18,000	12,000					134	223
Adrian No. 4,	Fan,	8	12,000	1	12,000							
Walston No. 5,	Fan,	7 and 5	23,000	2	12,000	11,000					151	152
Preston,	Furnace,	6x6	12,000	1	12,000						49	244
Sykes shaft,	Fan,											
Hillman,	Furnace,	5x6	10,000	1	10,000						48	208
Penn,	Furnace,	8x6	20,000	2	12,000	8,000					58	344
Fuller Run,†											21	
Gypsy,†												
Victor,	Fan,	10										
Yatesboro,	Fan,	13	105,000	8	10,000 12,000	19,000 16,000	9,000 14,000	8,000	10,000		496	211
Burnside,	Furnace,	7x6	20,000	1	20,000						66	303
Clearfield,	Furnace,	7x6	20,000	2	12,000	8,000					35	571
Wilson Run,†											22	
Superior,	Furnace,	5x6	8,000	1	8,000						33	242

O'Shanter,	rnace,	8x6	......	......	......	......	......	......	......	......	14	......
Glasgow,†	......	......	......	......	......	......	......	......	......	......	28	267
Pleasant Hill,	rnace,	7x6	7,500	1	7,500	......	......	......	......	......	82	195
Mountaindale,	rnace,	7x6	16,000	2	11,000	5,000	......	......	......	......	32	187
Blands,	rnace,	7x6	6,000	1	6,000	......	......	......	......	......	24	750
Harbison-Walker,	rnace,	5x6	18,000	1	18,000	......	......	......	......	......	60	150
Great Bend,	rnace,	5x6	9,000	1	9,000	......	......	......	......	......	62	177
Fricks,	rnace,	7x6	11,000	2	6,000	5,000	......	......	......	......		

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*Has not worked since May.

†No furnace at time of last visit.

Description of Fatal Accidents.

John W. Powell, driver, was fatally injured while at work in Adrian No. 1 mine, February 5. He was coming on to the sidetrack with a trip of loaded cars, and the front car of his trip caught against the rear car of an empty trip, and this threw the second car of his trip over against him, and he was caught between it and the rib, and fatally injured.

Mike Bisco, miner, was killed by a fall of bone coal at Burnside mine, February 11. He was at work pulling back a pillar, and had no props set under the bone coal which was loose on three sides, when it gave way, and fell upon him with fatal results. This accident was due to his own carelessness in not propping the coal or taking it down.

Garman Ferris, Antonio Rabbie and Joseph Mancuse, miners, were instantly killed by a fall of slate while at work in a room in Walston No. 3 mine, February 12. The room had been driven up to a fault, and they were taking a skip off the pillar so as to strip the fault. The roof was dangerous, and the floor soft, and the noise of the machine at work prevented them from hearing the roof working, and before they could escape they were caught and killed.

Stanley Jadora, scraper, was instantly killed by a fall of top coal at Eleanora No. 2 mine, March 2. He and the machine runner were at work undermining a fall in a pillar, and the jar of the machine brought the coal down upon him. The accident was the result of carelessness on the part of the victim, and of the machine runner.

Joseph Uhrim, scraper, was instantly killed at Walston No. 3 mine on March 16, by a fall of coal while the machine runner was undercutting it, and it was the result of their own carelessness in failing to sprag, and secure the coal before undermining it.

Steve Legasco and John Klingo, loaders, were killed by the same fall of roof at Eleanora mine, May 2. They were loading coal at face of a room that had been driven up the required distance, and had been ordered to set props, but they neglected to do so. The accident was due to their carelessness.

Edward Jepson, miner, was killed by a fall of roof in Irvona No. 3 mine, May 14. He knew the roof at this point was bad, and had one prop set under it, and was preparing to set another when it gave way, swinging out the prop already under it, and he was caught under a "pot." No one was to blame for this accident, as he was a very careful miner.

Angelo Pyne, miner, while at work starting a cross-cut in the heading, was instantly killed by a fall of slate from a slip in the roof at Walston No. 5 mine, June 27.

John Black, trackman, was killed by coming in contact with the electric wire as he was coming out of the cross heading in Yatesboro mine, July 17. He and some other men were coming out to dinner and Black touched his head against the wire, and the shock threw him down with such force that his head struck a rail and his neck was dislocated.

John Readeye, driver, was killed by a fall of coal in Adrian No. 1 mine, August 16, 1901. He had taken two empty cars into a place where they were pulling a pillar back and a fall was already undermined, and as he was passing between the mine cars and coal, a large body of coal fell away from a slip, and he was caught against the cars and killed. This accident was unavoidable.

Charles Lamb, driver, age seventeen, was killed by a fall of slate in a cross heading in Mountaindale mine, September 13. He was bringing a trip of loaded cars out of the heading, when a piece of slate broke away from the roof and caught him against the cars, killing him. This was an unavoidable accident.

Ben Goon, miner, was killed by a large lump of coal rolling upon him at Irvona No. 3 mine, October 4. He had fired a shot on the day before which brought down a large body of coal, and on that morning he was breaking up coal, or trying to clean out with his pick the fine coal lying on the bottom, when a large piece rolled over upon him fracturing his skull; accident was unavoidable.

Francis Golova, miner, was instantly killed by a fall of roof in West Eureka No. 10 mine, October 19. They were pulling back pillars, and the sandstone roof had been "working" more or less all day, when suddenly it gave way, and the men ran for their lives, and Golova was last, and was caught by the edge of the fall and killed. The accident was unavoidable.

Dominic Scripic, miner, was fatally injured by being run over by mine cars in Walston No. 3 mine, November 1. The driver was coming out of the heading with cars, and two Italians jumped on the end of the last car so as to ride to the sidetrack, and Golova ran around to the front of the trip as it was in motion and attempted to jump on the bumper of the front car, when he slipped, and fell on the rail and the cars passed over his thigh, inflicting such injuries that he died next morning. The accident was due to his own carelessness.

Pete Lobash, miner, was killed by a fall of coal at Eleanora mine, November 4, 1901. He and his butty were at work loading a mine car in front of a fall of coal that had been shot down in the center, when a large piece fell away and knocked Lobash against the car with such force that his neck was broken. The accident could have been averted had they taken down the coal that had been loosened by the shot.

Norman Fyke, laborer, was killed at Sykes shaft, November 12. He was working at top of shaft unloading mine cars as they were hoisted up the shaft, and about 10.30 P. M., he was unloading a car, and hearing the engineer hoisting a car, he left his work, and walked toward the top of the shaft, and the engineer hoisted the cage a little too high, and it broke two sticks of timber that were fastened on the head frame, and one of the pieces in falling struck Fyke on the head. The accident would not have happened had he remained at his work, as that point was 150 feet distant from the shaft.

James Fisher, miner, was killed by a fall of slate while at work in Bloomington No. 4 mine, December 12. He was working on heading stumps, and there was a small portion of one left at a point where a room had been turned away, and as the roof of the heading had been shot down to make height, the rock was resting on this stump, and as he was loading his last car for the day, a large piece of slate fell away from a slip, killing him. The accident was due to his own carelessness, as the roof was working at the time.

Condition of Mines.

Mines in Jefferson County.

From this county the largest tonnage of coal in this district is produced as here are the large mines of the Rochester and Pittsburg Coal and Iron Company, and the Berwind-White Coal Mining Company. The Walston mines are the oldest in this section and at present there are four mines working, Nos. 3, 4, 5 and 6, and the combined production of these mines is very large. No. 3 is a slope mine ventilated by a large fan, producing a large volume of air which is separated into several splits, and is well distributed around the different portions of the workings, which are very extensive. Explosive gas is sometimes found in the advanced workings of the mine, but it is well looked after, and not much trouble is experienced in its removal.

Most of the coal is cut by mining machines operated by compressed air; in a great many places they have trouble with rolls that make the coal low and hard to work. A large water ditch has been made during the year, and the greater volume of the water is drained into the Elk Run shaft, where it is forced to the surface by large pumps.

No. 4 Walston was in reasonably good condition at the different visits during the year, but as most of the solid coal in this mine is worked out, the mine will soon be on the retreat. No. 5 Walston was in good condition during the year, and the old mine has been worked out, but two new openings at other points have been made and the production kept up to its capacity. No. 6 Walston is a new mine opened during the year, and was in good condition.

Elk Run shaft workings adjoin the Walston slope workings, and the ventilation and drainage was good. They are at present driving a tunnel so as to connect with the lower workings of Adrian No. 1 mine.

Description of Mines.

Adrian No. 1 mine is a very extensive one, and a large producer of coal, and lies to the north of Elk Run shaft. This mine is ventilated by a large fan, and the current is well distributed around the different splits. A connection has been made from this mine into the Florence mine workings which belongs to the same company. Florence mine is getting to be a very large mine, and a new opening has been put in during the year, which will soon also be in operation. The ventilation of the mine was fair.

Eleanora mines operated by the Rochester and Pittsburg Coal and Iron Company, Nos. 1, 2 and 3 have worked very well during the year, and at the different visits they were found in good condition as regards ventilation and drainage. Many improvements have been made at the above mines, which are noted in another portion of this report.

The Berwind-White Coal Mining Company operates the following mines in this county, West Eureka Nos. 4, 6, 10, 11 and 13, and a new slope has been put down during the year, which will commence operations early the coming spring. Last year they had a fire in the No. 4 mine, but this has been overcome, and now all the workings in this part of the mine are in operation again. The ventilation was good at the different visits. No. 6 mine is a large distance in; the workings are quite extensive, and the ventilation is produced by fan. Mines Nos. 10, 11 and 13 are confined mostly to pillar working, and the condition of these mines was very good during the year.

Conrad and Shollar mines are operated by John McLeavy & Co. Conrad mine had not been worked during the time I have been visiting, but the Shollar mine has been in operation, and at the different visits it has always been found in a healthful condition, as there is a first class Capell fan in use for ventilating.

Sykes shaft operated by the Jefferson and Clearfield Coal and Iron Company has not yet shipped any coal, but about February 1, 1902, they expect to commence shipping, and this will undoubtedly be a very productive mine. The workings of this mine and Soldier mine adjoin, but are in different inspection districts.

Penn mine at Winslow, works regularly as it supplies the locomotives with fuel. The condition of the mine was good during the year.

Armstrong County Mines.

The only mines in operation in this district in the above county are the Yatesboro mines of the Cowanshannock Coal Company; they have a very extensive mine in operation at present, and are putting in a second operation that will ship early the present year. The coal here is all mined by machines; the mine is ventilated by a Capell fan.

Indiana County Mines.

Canoe Ridge Nos. 1, 2 and 3 mines are operated by the Clearfield Bituminous Coal Corporation; they are worked by the "Puncher" type of machine, and ventilated by fans and furnace. There was trouble at No. 1 for awhile with a poor roof, and so was there at the other two mines, but now this is improving, and they are opening up quite a territory of coal. The ventilation was very fair.

Hillman mine operated by H. A. Bowers is a new operation, and the mine has been developed considerably. A furnace has been built, and a temporary opening made for escape way, which will be replaced by a more permanent one shortly. The mine was in good condition.

Urey mines Nos. 1, 2 and 3 are operated by the Urey Ridge Coal Company. Nos. 1 and 3 mines have worked most during the year, and the ventilation and drainage of these mines was very good. A new opening to the rise of No. 3 was put in; the coal from this opening goes to No. 3 tipple, and the workings are connected with No. 3.

Glenwood Nos. 6 and 9 are operated by the Glenwood Coal Company, and part of the coal in No. 6 is cut by machines, and the coal hauled to the tipple more than a mile away by an electric motor; the fan is also operated by electricity. In Nos. 4 and 5 openings, the work is mostly confined to pulling out pillars. The condition of the mine was good. No. 9 opening is a slope opening on the B seam, but it has not proved very satisfactory as yet, as the coal is low and roof poor, so there has been very little work done here during the year, and the same may be said of No. 10, which is located in Clearfield county, for they have done very little work at that mine during the year, and there has been trouble with a fault, but have now cut through it.

Indiana mines, operated by the Indiana Coal Company, now embrace the Indiana, Clark and the Horton Run mines, and of these the old Indiana mine has worked most regularly. They have pushed the workings ahead considerably, and the condition of the mine was fair which may also be said of the other mines controlled by this company.

Cush Creek Nos. 1 and 2 mines are operated by the Cush Creek Coal and Coke Company, and the only work of consequence was done at

No. 1 mine, and it was in good condition, while No. 2 mine has never employed miners enough to come under the law, and they have been pushing development work.

Penn mine operated by Reakirt Bros. & Co., has done considerable work during the year, and the old opening has been confined to pillar working. The general condition of the mine was good.

Fuller Run operated by the Logan Coal Company is a new operation; the workings are not very far advanced, and the number of persons employed was not very large. The mine was in very fair condition.

Gipsy mine operated by the Gipsy Coal Company is a new mine that was being put in operation on my last visit; they were putting in the opening and ventilating shaft.

Arcadia Nos 1, 2 and 3 are operated by the Beech Creek Coal and Coke Company, and they have been worked very well during the year, and considerable ground has been opened up. These mines are all ventilated by furnaces, and the condition was good during the year. At No. 2 mine on my last visit they were making preparations for installing machinery for coal cutting and haulage.

Victor No. 11 is operated by the Ellsworth-Dunham Coal Company, and they have not yet commenced to ship coal from the new opening, but have been pushing the main heading and getting ready for shipments when the railroad is completed to the tipple.

Clearfield County Mines.

Burnside mine operated by the Burnside Coal Company has been worked fairly well during the year, and they have pushed the work in the second opening adjoining the Glenwood mine. The condition of both openings as regards ventilation and drainage was good.

Clearfield mine at New Washington, is operated by the Clearfield and Cambria Coal and Coke Company, and they have put in two additional openings during the year, and are making connections from one to the other. The ventilation and drainage of the mine was good. They have erected a new tipple and dispensed with the plane formerly used.

Jose mine operated by Mosher and Jose, is a small operation, and at my last visit they were pushing a heading to the outside for a second opening, and also to locate a furnace shaft.

National mines Nos. 1 and 2 did not work very regularly during the year and the coke ovens were idle for a long time, but on my last visit they were firing them up again. They have put in a new opening that is really a part of No. 1 mine, and had furnace shaft sunk at time of last visit, and the condition of both openings was good.

Irvona No. 3 mine was in good condition at the different visits. They have to some extent operated the old Barnes mine, and this also was found all right when visited. This mine is operated by the Irvona Coal Company. They have built twenty additional coke ovens during the year.

Blaine Run mines Nos. 1 and 2 operated by the Baine Run Coal Company were found in good condition during the year. No. 1 mine is ventilated by fan, and No. 2 by furnace.

Oakland Nos. 1 and 2 mines are operated by Hegarty's Sons; No. 1 has now a good tail rope system of haulage, and is ventilated by a Stine fan. An opening has been made on the opposite side of the hill for drainage. The No. 2 mine has worked part of the year, and this is ventilated by furnace; both mines were in good condition during the year.

Superior mine operated by the Coalport Coal Company is a new operation, and is not developed very much as yet, as not very many men are employed. A small furnace has been built for ventilation, and the mine was kept in good condition.

Cambria County Mines.

Glasgow mine operated by the Glasgow Coal Company is a new operation near Glasgow, which commenced shipping coal in the fall. They have not done very much work in the mine yet, and are driving for second opening, and will put in a furnace very soon, as the shaft is sunk for that purpose.

Pleasant Hill mine operated by Joseph Smittle is not a very large mine, but they work reasonably steady, and the mine was in good condition during the year.

Mountaindale mine, operated by W. J. Nicoll was in good condition at the different visits made during the year. They have leased some adjoining coal, and are now pushing headings into this and opening it up. They have also taken considerable coal from a small opening opposite the tipple, which had been left in previous years, and this will soon be exhausted.

Frick mine operated by Max Frick, was in good condition at the different visits during the year, and an effort is being made to cut the fault that has been impeding work for some time. The roof of this mine still remains very poor, needing constant attention.

Great Bend mine operated by the Bellwood Coal Company, adjoins the above mentioned mine, and the conditions are similar. The mine was fairly ventilated during the year.

Harbison-Walker mine operated by the Harbison-Walker Company, was found in reasonably good condition, and at my last visit they were putting up a Stine fan for ventilation, for in addition to the coal, fire clay for the large fire brick works at this place is also produced.

Blands mine operated by Fred. Bland, supplies coal for locomotives and they work reasonably steady, but they are going up against a big fault at the back of the workings, and this is narrowing up the workings to some extent. The mine was in fair condition.

Gazzam mine operated by the Clearfield Bituminous Coal Corporation has worked very well during the year, and it was always in good condition at the time of the usual visits.

Bloomington mines Nos. 3, 4 and 5 operated by Peale, Peacock and Kerr, and the work in Nos. 3 and 4 mines is decreasing all the time, as most of it is pillar work. In No. 5 mine they are opening up considerable ground, which will be their largest mine. The mines were found in very fair condition during the year.

O'Shanter mine operated by Weaver & Ettla, was not operated during the year.

Improvements During the Year.

The following improvements have been made at the mines mentioned during the past year.

A new drift mine designated as Walston No. 6 was opened in Perry township near the village of Frostburg. This mine has a territory of some 800 to 1,000 acres of coal, and it has been laid out for convenient and economical operation, using compressed air for mining machines and electricity exclusively for hauling coal. The power plant consists of four 150 horse power boilers, one Ingersoll air compressor, 28x30, and one 250 horse power McEwen engine direct connected to a 150 k. w. Thompson-Ryan generator. One mine locomotive is at present sufficient while the mine is being developed. A 25x6 Guibal fan furnishes the ventilation. The B. R. & P. R. R. was extended from Walston mines to a point some 3,500 feet from the drift mouth, which point was the most advantageous location for a tipple, and an extensive tipple and loading apparatus were erected here, sufficient to care for a mine having a production of 2,000 tons per day. The coal is hauled overland from the mine to the tipple by the same electric locomotive, and the output had reached to 500 tons per day within two months after the mine was opened.

At the Elk Run shaft a second large pump was installed during the year. This a Jeanesville duplex compound condensing, size 16 and 30x20x36, having a capacity of 2,500 gallons per minute at the surface. Two boilers of 150 horse power each were erected, being necessary to supply the additional power for the pump.

At Adrian the improvements of the year consist of the rebuilding of the tipple and coal bins which were burned in November, 1900, and the addition of many improvements and conveniences thereto. Also the old coke crusher has been demolished and a new one erected on somewhat different lines, which when completed, will contain many improvements and facilities for making and handling all the different sizes of crushed coke.

At Florence mine, one additional 28x30 Norwalk air compressor has been installed. Electric mine haulage, covering fully one-half the output of the mine has been installed, the power plant consisting of one Erie City 280 horse power engine, and one McEwen 256 horse power engine, each direct connected to a 150 k. w. General Electric generator. There are eight electric mine locomotives in use. Two boilers of 150 horse power each were added to the plant to furnish power. Florence No. 2, a drift mine has been opened, and is now in process of development.

At the Eleanora mine there has been installed auxiliary haulage engines at a point on the slope about 6,000 feet from the pit mouth. These engines are intended to bring the coal from all the lower headings to the side track on the slope which is located some 4,500 feet from the pit mouth. From this point the outside engines haul to the surface. This plant consists of one pair Webster, Camp & Lane latest haulage engines, cylinders 15"x20", and two 6-foot drums. The pulling rope and the tail are spliced together and are operated on the endless rope system, using a grip car to handle the trips. These engines are housed in a large engine room which was blasted out of the solid rock. The steam is supplied through a bore hole from the McKees Run boiler plant. Two additional 150 horse power boilers have been erected to supply the power. Electric mine haulage was inaugurated in several of the lower headings. The power plant for this has also been located at McKees Run, and consists of one McEwen 280 horse power engine and one 150 k. w. General Electric generator. The power is conveyed through a bore hole into the mine, and three electric mine locomotives are in operation.

The above improvements have all been made at mines operated by the Rochester and Pittsburg coal and Iron Company.

At the Sykesville shaft belonging to the Jefferson and Clearfield Coal and Iron Company, the following equipment has installed, and they expect to ship coal on or about February 1, 1902. Six Erie City boilers of 150 horse power each; two Ingersoll compressors 24"x26"-30" each; one pair Vulcan Iron Works hosting engines, 16"x30"; two Jeanesville Iron Works pumps, 25"x20"x36" and traveling at twenty-five strokes per minute, capable of delivering at the surface of the shaft 10,000 gallons per minute; one eight inch syphon. A tipple is being built and a new head frame. The boiler house and compressor room are built of iron.

The Berwind-White Coal Mining Company at their No. 6 mine has added a new air compressor, and also a 200 horse power Sterling boiler, and also drilled two wells to a depth of 200 feet, and thus obtained a good supply of water for this plant. At their No. 10

mine they have installed two Meadville boilers of eighty horse power capacity each. During the year they put down a new slope, No. 7, which will be in operation early in 1902.

The Cowanshannock Coal and Coke Company at Yatesboro, has during the past year put in four tubular boilers of 150 horse power each, two air compressors, one electric dynamo, and three electric mine locomotives.

The Beech Creek Coal and Coke Company at their Arcadia No. 2 mine, put in one Norwalk compressor 20″x20″, capable of developing 130 horse power to operate coal cutting machines, also two tubular boilers of seventy horse power each, and during the coming summer a fan and electric haulage will be installed.

The Urey Ridge Coal Company has had a power wire run from Glenwood Coal Company mine and operated one electric machine a little before the close of the year.

TABLE I—Showing Names of Operators, Railroads, etc., etc., and Location of Collieries in the Twelfth Bituminous District for the Year 1901.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Rochester & Pbg. C. & I. Co.						
Walston No. 3,	Jefferson,	Lucius W. Robinson,	Punxsutawney,	Thomas R. Johns,	Walston,	Buffalo, Rochester & Pitts'g.
Walston No. 4,	Jefferson,	Lucius W. Robinson,	Punxsutawney,	Thomas R. Johns,	Walston,	Buffalo, Rochester & Pitts'g.
Walston No. 6,	Jefferson,	Lucius W. Robinson,	Punxsutawney,	Thomas R. Johns,	Walston,	Buffalo, Rochester & Pitts'g.
Elk Run shaft,	Jefferson,	Lucius W. Robinson,	Punxsutawney,	John H. Bell,	Punxsutawney,	Buffalo, Rochester & Pitts'g.
Adrian No. 2,	Jefferson,	Lucius W. Robinson,	Punxsutawney,	A. W. Calloway,	Delancy,	Buffalo, Rochester & Pitts'g.
Florence,	Jefferson,	Lucius W. Robinson,	Punxsutawney,	A. W. Calloway,	Delancy,	Buffalo, Rochester & Pitts'g.
Eleanora No. 1,	Jefferson,	Lucius W. Robinson,	Punxsutawney,	David Fleming,	Eleanora,	Buffalo, Rochester & Pitts'g.
Eleanora No. 2,	Jefferson,	Lucius W. Robinson,	Punxsutawney,	David Fleming,	Eleanora,	Buffalo, Rochester & Pitts'g.
Eleanora No. 3,	Jefferson,	Lucius W. Robinson,	Punxsutawney,	David Fleming,	Eleanora,	Buffalo, Rochester & Pitts'g.
Berwind White C. M. Co.						
West Eureka No. 4,	Jefferson,	Thomas A. Fisher,	Philadelphia,	A. J. Cook,	Horatio,	Penna. & North Western.
West Eureka Nos. 1 and 6,	Jefferson,	Thomas A. Fisher,	Philadelphia,	A. J. Cook,	Horatio,	Penna. & North Western.
West Eureka No. 10,	Jefferson,	Thomas A. Fisher,	Philadelphia,	A. J. Cook,	Horatio,	Penna. & North Western.
West Eureka No. 11,	Jefferson,	Thomas A. Fisher,	Philadelphia,	A. J. Cook,	Horatio,	Penna. & North Western.
West Eureka No. 13,	Jefferson,	Thomas A. Fisher,	Philadelphia,	A. J. Cook,	Horatio,	Penna. & North Western.
John McLeavy & Co.						
Conrad,	Jefferson,	John McLeavy,	Punxsutawney,			Penna. & North Western.
Shollar,	Jefferson,	John McLeavy,	Punxsutawney,			Penna. & North Western.
Clearfield Bit. Coal Corp'n.						
Canoe Ridge No. 1,	Indiana,	R. A. Shillingford,	Clearfield,	W. A. Broadmeadow,	Rossiter,	N. Y. Cen. & Hudson River.
Canoe Ridge No. 2,	Indiana,	R. A. Shillingford,	Clearfield,	W. A. Broadmeadow,	Rossiter,	N. Y. Cen. & Hudson River.
Canoe Ridge No. 3,	Indiana,	R. A. Shillingford,	Clearfield,	W. A. Broadmeadow,	Rossiter,	N. Y. Cen. & Hudson River.
Gazzam,	Clearfield,	R. A. Shillingford,	Clearfield,	James Methven,	Gazzam,	N. Y. Cen. & Hudson River.
Urey Ridge Coal Co.						
Urey No. 1,	Indiana,			Thomas Bellis,	Burnside,	Pennsylvania Railroad.
Urey No. 2,	Indiana,			Thomas Bellis,	Burnside,	Pennsylvania Railroad.
Urey No. 3,	Indiana,			Thomas Bellis,	Burnside,	Pennsylvania Railroad.
Glenwood Coal Co.						
Glenwood No. 6,	Indiana,	A. M. Riddle,	Glen Campbell,			Pennsylvania Railroad.
Glenwood No. 8,	Indiana,	A. M. Riddle,	Glen Campbell,			Pennsylvania Railroad.
Gelnwood No. 10,	Clearfield,	A. M. Riddle,	Glen Campbell,			Pennsylvania Railroad.

Indiana Coal Co.						
Indiana No. 1,	Indiana,	George Scott,	Philipsburg,			P. R. R. & N. Y. C. & H. R.
Indiana No. 2,	Indiana,	George Scott,	Philipsburg,			Pennsylvania Railroad.
Indiana No. 3,	Indiana,	George Scott,	Philipsburg,			Pennsylvania Railroad.
Indiana No. 4,	Indiana,	George Scott,	Philipsburg,			Pennsylvania Railroad.
Beech Creek Coal & Coke Co.						
Arcadia No. 1,	Indiana,	W. C. Lingle,	Patton,			N. Y. Cen. & Hudson River.
Arcadia No. 2,	Indiana,	W. C. Lingle,				N. Y. Cen. & Hudson River.
Arcadia No. 3,	Indiana,	W. C. Lingle,				N. Y. Cen. & Hudson River.
Clearfield and Cush Creek Coal and Coke Co.						
Cush Creek No. 1,	Indiana,			John Hoover,	Glen Campbell,	Pennsylvania Railroad.
Cush Creek No. 2,	Indiana,			John Hoover,	Glen Campbell,	Pennsylvania Railroad.
Philadelphia C. & C. Co.						
National No. 1,	Clearfield,			William M. Smith,	Ebensburg,	Penna. & North Western.
National No. 2,	Clearfield,					Penna. & North Western.
Irvona Coal Co.						
Irvona No. 3,	Clearfield,	R. J. Buckholz,	Philadelphia,	Archie Bathgate,	Coalport,	Penna. & North Western.
Irvona No. 4,	Clearfield,			Archie Bathgate,	Coalport,	Penna. & North Western.
Blaine Run Coal Co.						
Blaine Run No. 1,	Clearfield,			W. H. Helman,	Coalport,	Penna. & North Western.
Blaine Run No. 2,	Clearfield,			W. H. Helman,	Coalport,	Penna. & North Western.
S. Hegarty's Sons.						
Oakland No. 1,	Clearfield,			W. S. Hegarty,	Coalport,	Pennsylvania Railroad.
Oakland No. 2,	Clearfield,			W. S. Hegarty,	Coalport,	Penna. & North Western.
Peale, Peacock & Kerr.						
Bloomington No. 3,	Clearfield,	Alex. Dunsmore,	Glen Richey,	W. G. Dunsmore,	Glen Richey,	N. Y. Cen. & Hudson River.
Bloomington No. 4,	Clearfield,	Alex. Dunsmore,	Glen Richey,			N. Y. Cen. & Hudson River.
Bloomington No. 5,	Clearfield,	Alex. Dunsmore,	Glen Richey,			N. Y. Cen. & Hudson River.
S. A. Rinn.						
Adrian No. 4,	Jefferson,			S. A. Rinn,	Punxsutawney,	Buffalo, Rochester & Pitts'g.
Kurtz & Rinn.						
Walston No. 5,	Jefferson,			S. A. Rinn,	Punxsutawney,	Buffalo, Rochester & Pitts'g.
W. A. Preston.						
Penn No. 2,	Jefferson,	W. A. Preston,	Pittsburg,	R. F. Nichols,	Winslow,	Penna. & North Western.
Jefferson & Clfd. C. & I. Co.						
Sykes shaft,	Jefferson,					Buffalo, Rochester & Pitts'g.
H. A. Bowers.						
Hillman,	Indiana,			H. A. Bowers,	Punxsutawney,	Penna. & North Western.

TABLE I—Continued.

Names of Operators and Collieries.	County.	Name of General Superintendent.	P. O. Address.	Name of Superintendent.	P. O. Address.	Railroad to Mine.
Reakirt Bros. & Co. Penn,	Indiana,	F. A. Von Boynburgk,	Philadelphia,	W. J. Treverick,	Glen Campbell,	P. R. R. & P. & W. W. R. R.
Logan Coal Co. Fuller Run,	Indiana,			F. A. Boucher,	Dunlo,	Pennsylvania Railroad.
Gipsy Coal Co. Gipsy,	Indiana,					Pennsylvania Railroad.
Ellsworth-Dunham C. Co. Victor No. 11,	Indiana,					N. Y. Cen. & Hudson River.
Cowanshannock Coal Co. Yatesboro Nos. 1 and 2,	Armstrong,	Lucius W. Robinson,	Punxsutawney,	James Craig,	Yatesboro,	Buffalo, Rochester & Pitts'g.
Burnside Coal Co. Burnside,	Clearfield,			Thomas Bellis,	Burnside,	N. Y. Cen. & Hudson River.
Clfd. & Cambria C. & C. Co. Clearfield,	Clearfield,			James Fleming,	New Washington,	Pennsylvania Railroad.
Mosher & Jose. Wilson Run,	Clearfield,					Penna. & North Western.
Coalport Coal Co. Superior,	Clearfield,	A. A. Stevens,	Tyrone,	Geo. P. Bell,	Coalport,	Penna. & North Western.
Weaver & Ettla, O'Shanter,	Clearfield,					N. Y. Cen. & Hudson River.
Glasgow Coal Co. Glasgow,	Cambria,					Penna. & North Western.
Joseph Smittle. Pleasant Hill,	Cambria,			Joseph Smittle,	Glasgow,	Penna. & North Western.
W. J. Nicolls. Mountaindale,	Cambria,			Charles Lamb,	Glasgow	Penna. & North Western.
Fred. Bland. Blands,	Cambria,			Fred. Bland,	Blandsburg,	Penna. & North Western.

Harbison-Walker Co. Harbison-Walker,	Cambria,	H. M. Kurtz,	Clearfield,	J. A. Boyd,	Blandsburg,	Penna. & North Western.
Bellwood Coal Co. Great Bend,	Cambria,			W. S. Bell,	Bellwood,	Penna. & North Western.
Max Frick. Frick,	Cambria,			Max Frick,	Blandsburg,	Penna. & North Western.

TABLE II—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder, etc., used in the Twelfth Bituminous District for the year ending December 31, 1901.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Rochester and Pittsburg Coal and Iron Co.														
Walston No. 3,	Jefferson,										7			
Walston No. 4,	Jefferson,										2			
Walston No. 6,	Jefferson,													
Elk Run shaft,	Jefferson,	466,715	42,015	2,186	950,204	220,680	700	275	1,036	6	1	3,300	5,500	104
Adrian No. 2,	Jefferson,									2	11			
Florence,	Jefferson,	753,861	42,090	4,774	1,060,151	149,559	176	280	1,267		12	4,700	6,300	130
Eleanora No. 1,	Jefferson,													
Eleanora No. 2,	Jefferson,										5			
Eleanora No. 3,	Jefferson,	720,063	37,068	7,272	875,036	79,025	201	301	830	4	4	4,000	13,000	90
Total,		1,940,639	121,173	14,232	2,885,391	449,264	1,377	285	3,133	12	42	12,000	24,800	324
Berwind-White Coal Mining Co.														
West Eureka No. 4,	Jefferson,	24,603	2,597	95	27,295			111	163			450	150	16
West Eureka Nos. 1 and 6,	Jefferson,	120,782	12,319		133,101			158	239		2	1,165	5,795	28
West Eureka No. 10,	Jefferson,	100,338	1,947	25	102,310			293	156	1	4	1,350	150	24
West Eureka No. 11,	Jefferson,	73,144	52	481	73,677			204	89		2	775	50	18
West Eureka No. 13,	Jefferson,	34,318	4	56	34,378			124	52			150	100	10
Total,		353,185	16,919	657	370,761			178	639	1	8	3,890	6,245	96
John McLeavy & Co.														
Conrad,	Jefferson,	9,932		57	9,989			52	70					4
Shollar,	Jefferson,	76,901	1,500	20	78,421			226	91					10
Total,		86,833	1,500	77	88,410			139	161					14

Clearfield Bituminous Coal Corp.														
Canoe Ridge No. 1,	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......
Canoe Ridge No. 2,	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......
Canoe Ridge No. 3,	Indiana,	185,488	2,300	26	187,814	210	......	256	497	......	......	950	200	16
Gazzam,	Clearfield,	72,102	270	604	72,976	......	......	253	124	......	......	881	296	12
Total,		257,590	2,570	630	260,790	210	......	255	621	......	......	1,831	496	28
Urey Ridge Coal Co.														
Urey No. 1,	Indiana,	33,124	......	100	33,224	......	......	100	70	......	2	......	......	8
Urey No. 2,	Indiana,	13,613	......	......	13,613	......	......	43	45	......	......	704	......	4
Urey No. 3,	Indiana,	49,942	......	50	49,992	......	......	160	72	......	......	......	......	5
Total,		96,679	......	150	96,829	......	......	101	187	......	2	704	......	17
Glennwood Coal Co.														
Glenwood No. 6,	Indiana,	96,414	1,137	1,075	98,626	......	......	211	175	......	......	958	......	......
Glenwood No. 8,	Indiana,	2,121	......	......	2,121	......	......	91	16	......	......	23	......	1
Glenwood No. 10,	Clearfield,	10,739	......	450	11,189	......	......	59	70	......	......	138	......	4
Total,		109,274	1,137	1,525	111,936	......	......	120	261	......	......	1,119	......	5
Indiana Coal Co.														
Indiana No. 1,	Indiana,	50,066	826	598	51,490	......	......	221	99	......	......	485	......	9
Indiana No. 2,	Indiana,	969	......	......	969	......	......	20	30	......	......	10	......	2
Indiana No. 3,	Indiana,	1,488	......	......	1,488	......	......	77	11	......	......	15	......	1
Indiana No. 4,	Indiana,	7,519	......	......	7,519	......	......	91	35	......	......	72	......	2
Total,		60,042	826	598	61,466	......	......	102	175	......	......	582	......	14
Beech Creek Coal and Coke Co.														
Arcadia No. 1,	Indiana,	26,742	......	68	26,810	......	......	144	57	......	......	200	100	2
Arcadia No. 2,	Indiana,	52,214	......	156	52,370	......	......	147	87	......	......	400	50	5
Arcadia No. 3,	Indiana,	10,601	......	37	10,638	......	......	148	17	......	......	200	150	1
Total,		89,557	......	261	89,818	......	......	146	161	......	......	800	300	8
Clearfield and Cush Creek Coal and Coke Co.														
Cush Creek No. 1,	Indiana,	17,845	......	75	17,920	......	......	166	45	......	......	250	......	1
Cush Creek No. 2,	Indiana,	2,380	......	25	2,405	......	......	119	8	......	......	35	......	1
Total,		20,225	......	100	20,325	......	......	113	53	......	......	285	......	2
Philadelphia Coal and Coke Co.														
National No. 1,	Clearfield,	......	......	......	......	......	......	......	......	......	......	......	......	......
National No. 2,	Clearfield,	6,754	363	196	37,316	24,109	109	179	92	......	......	200	200	12
Total,		6,754	363	196	37,316	24,109	109	179	92	......	......	300	200	12

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mu'es.
Irvona Coal Co.														
Irvona No. 3,	Clearfield,	......	......	......	......	......	......	......	......	......	......	......	......	......
Irvona No. 4,	Clearfield,	79,186	1,803	485	132,990	34,344	80	163	241	2	1	600	50	22
Total,		79,186	1,803	485	132,990	34,344	80	163	241	2	1	600	50	22
Blaine Run Coal Co.														
Blaine Run No. 1,	Clearfield,	36,450	300	250	37,000	......	......	157	94	......	......	350	......	10
Blaine Run No. 2,	Clearfield,	4,600	......	......	4,600	......	......	86	26	......	......	75	......	2
Total,		41,050	300	250	41,600	......	......	122	120	......	......	425	......	12
S. Hegarty's Sons.														
Oakland No. 1,	Clearfield,	44,695	960	58	45,713	......	......	228	91	......	......	410	......	3
Oakland No. 2,	Clearfield,	6,253	......	......	6,253	......	......	163	13	......	......	52	......	1
Total,		50,948	960	58	51,966	......	......	196	104	......	......	462	......	4
Peale, Peacock & Kerr.														
Bloomington No. 3,	Clearfield,	26,333	......	......	26,333	......	......	166	39	......	......	......	......	6
Bloomington No. 4,	Clearfield,	39,245	600	......	39,845	......	......	173	80	1	......	1,045	50	11
Bloomington No. 5,	Clearfield,	49,534	200	800	50,534	......	......	168	141	......	1	......	30	11
Total,		115,112	800	800	116,712	......	......	169	260	1	1	1,045	80	28
S. A. Rinn.														
Adrian No. 4,*	Jefferson,	......	......	......	......	......	......	......	......	......	......	......	......	......
Kurtz & Rinn.														
Walston No. 5,†	Jefferson,	......	......	......	......	......	......	259	160	......	1	......	......	......

W. A. Preston. Penn No. 2,	Jefferson,	34,100	25	63	34,188	....	....	208	53	......	......	407	15	7
Jefferson and Clearfield Coal and Coke Co. Sykes shaft,‡	Jefferson,	....	....	....	....	....	....	....	....	1	......	......	......	......
H. A. Bowers. Hillman,	Indiana,	6,899	....	....	6,899	....	....	95	53	......	......	......	......	2
Reakirt Bros. & Co. Penn,	Indiana,	56,260	....	....	56,260	....	....	180	64	......	......	400	......	11
Logan Coal Co. Fuller Run,	Indiana,	7,077	....	....	7,077	....	....	136	25	......	......	125	......	2
Gypsy Coal Co. Gypsy,‡	Indiana,	....	....	....	....	....	....	....	....	......	......	......	......	......
Ellsworth Dunham Coal Co. Victor No. 11,‡	Indiana,	....	....	....	....	....	....	....	....	......	......	......	......	......
Cowanshannock Coal Co. Yatesboro Nos. 1 and 2,	Armstrong,	455,910	7,105	995	464,010	....	....	302	564	1	1	3,050	1,600	10
Burnside Coal Co. Burnside,	Clearfield,	40,688	....	220	40,888	....	....	148	69	1	1	160	......	12
Clearfield and Cambria Coal and Coke Co. Clearfield,	Clearfield,	11,432	....	140	11,572	....	....	120	39	......	......	40	300	3
Mosher & Jose. Wilson Run,	Clearfield,	1.350	....	100	1,450	....	....	69	23	......	......	......	......	1
Coalport Coal Co. Superior,	Clearfield,	6,725	....	25	6,750	....	....	115	33	......	......	55	10	1
Weaver &Ettla. O'Shanter,‡	Clearfield,	....	....	....	....	....	....	....	....	......	......	......	......	......
Glasgow Coal Co. Glasgow,	Cambria,	2,063	115	95	2,273	....	....	53	18	......	......	40	......	1
Joseph Smittle. Pleasant Hill,	Cambria,	14,390	....	149	14.539	....	....	265	29	......	......	80	......	1
W. J. Nicolls. Mountaindale,	Cambria,	12.039	275	894	40.656	19.910	50	245	98	1	2	80	80	5
Fred. Bland. Blands,	Cambria,	28 771	....	166	28,937	....	....	260	24	......	......	......	......	4

TABLE II—Continued.

Names of Operators and Collieries.	County.	Shipments of coal in tons by rail or otherwise.	Number of tons used for steam and heat at colliery.	Sold to local trade and used by employes—tons.	Total production of coal in tons.	Total production of coke in tons.	Number of coke ovens.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number pounds of dynamite used.	Number horses and mules.
Harbison-Walker Co.														
Harbison-Walker, ...	Cambria,.....	....	240	837	19,946	....	....	304	26	......	......	450	....	2
Bellwood Coal Co.														
Great Bend, ...	Cambria,.....	28,879	....	....	28,879	....	....	195	63	......	......	554	500	5
Max Frick.														
Frick, ...	Cambria,.....	43,058	100	200	43,358	....	....	199	65	......	1	500	50	5
Grand total, ...	....	4,056,715	156,211	23,883	5,173,992	527,837	1,607	§176	7,624	20	60	29,984	37,726	658

*Production included with Adrian.
†Production included with Walston Nos. 3, 4 and 6.
‡No shipments this year.
§Average.

TABLE 11—Continued.

Names of Operators and Collieries.	County.	Number of Boilers.				Total horse power.	Locomotives.			Number steam engines of all classes.	Total horse power.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Steam.	Air.	Electric.							
Rochester and Pittsburg Coal and Iron Co.,	Jefferson,	4	220	67	7,610	7,830	8	1	12	34	4,570	11	9,655	5,640	6	19
Berwind-White Coal Mining Co.,	Jefferson,	3	200	14	1,720	1,920	......	......	......	7	800	9	3,595	2,600	......	3
John McLeavy & Co.,	Jefferson,	......	......	2	110	220	......	......	......	2	330	1	150	......	......	......
Clearfield Bituminous Coal Corporation,	Indiana,	......	......	6	685	685	......	......	2	5	264	4	700	565	2	2
Urey Ridge Coal Co.,	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Glenwood Coal Co.,	Ind. & C'fld.,	......	......	2	150	300	......	......	2	2	250	1	100	100	2	......
Indiana Coal Co.,	Indiana,	......	......	1	60	60	......	......	......	5	150	1	300	200	......	......
Beech Creek Coal and Coke Co.,	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Clearfield and Cush Creek Coal and Coke Co.,	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Philadelphia Coal and Coke Co.,	Clearfield,	......	......	1	80	80	......	......	......	2	50	......	......	......	......	......
Irvona Coal Co.,	Clearfield,	......	......	4	200	200	2	......	......	4	210	1	48	36	......	......
Blaine Run Coal Co.,	Clearfield,	......	......	1	100	......	......	......	......	......	......	......	......	......	......	......
S. Hegarty's Sons,	Clearfield,	......	......	1	180	180	......	......	......	3	85	1	50	40	......	......
Peale, Peacock & Kerr,	Clearfield,	......	......	3	275	425	......	......	......	1	150	......	......	......	......	......
S. A. Rinn,	Jefferson,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Kurtz & Rinn,	Jefferson,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
W. A. Preston,	Jefferson,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Jefferson and Clearfield Coal and Iron Co.,	Jefferson,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
H. A. Bowers,	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Rearkirt Bros. & Co.,	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Logan Coal Co.,	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Gypsy Coal Co.,	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Ellsworth Dunham Coal Co.,	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Cowanshannock Coal Co.,	Armstrong,	......	......	6	900	900	......	......	4	2	300	1	500	200	1	3
Burnside Coal Co.,	Clearfield,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Clearfield and Cambria Coal and Coke Co.,	Clearfield,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Mosher & Jose,	Clearfield,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Coalport Coal Co.,	Clearfield,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Weaver & Ettla,	Clearfield,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......

TABLE II—Continued.

Names of Operators and Collieries.	County.	Number of Boilers.				Total horse power.	Locomotives.			Total horse power.	Number steam engines of all classes.	Number pumps delivering water to surface.	Capacity in gallons per minute.	Quantity delivered to surface per minute—gallons.	Number electric dynamos.	Number air compressors.
		Cylindrical.	Horse power.	Tubular.	Horse power.		Air.	Electric.	Steam.							
Glasgow Coal Co.,	Cambria,			1	125	125				1	100					
Joseph Smittle,	Cambria,															
W. J. Nicolls,	Cambria,			1	40	40				1	40					
Fred. Bland,	Cambria,															
Harbison-Walker Co.,	Cambria,															
Bellwood Coal Co.,	Cambria,															
Max Frick,	Cambria,															
Grand total,		7	420	110	12,235	12,965	10	1	20	69	7,299	30	15,099	9,381	11	27

TABLE III—Showing the number of each class of employes at each colliery in the Twelfth Bituminous District for the year 1901.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	Grand total inside and outside.
Rochester & Pittsburg C. & I. Co.																		
Walston No. 3,	Jefferson,	3	2	839	16	43	14	36	953	1	9	36	2	......	5	30	83	1,036
Walston No. 4,	Jefferson,																	
Walston No. 6,	Jefferson,																	
Elk Run shaft,	Jefferson,																	
Adrian No. 2,	Jefferson,	3	3	969	48	72	24	61	1,180	2	11	21	2	......	4	47	87	1,267
Florence,	Jefferson,																	
Eleanora No. 1,	Jefferson,	4	......	657	....	77	15	29	782	1	7	17	1	......	2	20	48	830
Eleanora No. 2,	Jefferson,																	
Eleanora No. 3,	Jefferson,																	
Total,		10	5	2,465	64	192	53	126	2,915	4	27	94	5	......	11	97	218	3,133
Berwind White C. M. Co.																		
West Eureka No. 4,	Jefferson,	1	......	67	7	7	3	6	91	......	2	5	1	......	1	3	12	103
West Eureka Nos. 1 and 6,	Jefferson,	2	1	165	17	13	4	10	212	......	4	5	1	......	1	16	27	239
West Eureka No. 10,	Jefferson,	1	......	124	....	8	3	9	145	......	2	4	1	......	......	4	11	156
West Eureka No. 11,	Jefferson,	1	......	72	....	5	......	4	82	......	1	......	1	......	1	4	7	89
West Eureka No. 13,	Jefferson,	1	......	36	....	4	2	4	47	......	1	......	1	......	......	3	5	52
Total,		6	1	464	24	37	12	33	577	......	10	14	5	......	3	30	62	63

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeepers and clerks.	All other employes.	Total outside.	
John McLeavy & Co.																		
Conrad,	Jefferson,	1	......	60	....	3	2	1	67	......	......	......	......	......	......	3	3	70
Shollar,	Jefferson,	1	......	67	....	6	3	3	80	......	2	3	......	......	1	5	11	91
Total,		2	......	127	....	9	5	4	147	......	2	3	......	......	1	8	14	161
Clearfield Bit. Coal Corporation.																		
Canoe Ridge No. 1,	Indiana,	......	......	....	....	....	......	......	....	......	......	......	......	......	......	......	....	....
Canoe Ridge No. 2,	Indiana,	......	......	....	....	....	......	......	....	......	......	......	......	......	......	......	....	....
Canoe Ridge No. 3,	Indiana,	2	......	237	24	14	5	84	366	1	2	6	......	......	2	120	131	497
Gazzam,	Clearfield,	1	......	90	10	5	1	4	111	1	2	2	......	......	2	6	13	124
Total,		3	......	327	34	19	6	88	477	2	4	8	......	......	4	126	144	621
Urey Ridge Coal Co.																		
Urey No. 1,	Indiana,	1	......	60	....	4	......	1	66	......	1	......	......	......	1	2	4	70
Urey No. 2,	Indiana,	1	......	40	....	2	......	1	44	......	......	......	......	......	......	1	1	45
Urey No. 3,	Indiana,	1	......	62	....	4	......	1	68	......	1	......	......	......	1	2	4	72
Total,		3	......	162	....	10	......	3	178	......	2	......	......	......	2	5	9	187

Glenwood Coal Co.																		
Glenwood No. 6,	Indiana,	1	......	140	......	2	......	18	161	......	3	2	2	......	3	4	14	175
Glenwood No. 8,	Indiana,	1	......	11	......	1	......	2	15	......	......	......	......	......	......	1	1	16
Glenwood No. 10,	Clearfield,	1	......	62	......	2	......	1	66	......	1	......	1	......	......	2	4	70
Total,	......	3	......	213	......	5	......	21	242	......	4	2	3	......	3	7	19	261
Indiana Coal Co.																		
Indiana No. 1,	Indiana,	1	......	79	......	5	......	3	88	1	1	2	1	......	3	3	11	99
Indiana No. 2,	Indiana,	1	......	25	......	2	......	......	28	......	......	......	......	......	......	2	2	30
Indiana No. 3,	Indiana,	1	......	8	......	1	......	......	10	......	......	......	......	......	......	1	1	11
Indiana No. 4,	Indiana,	1	......	30	......	2	......	......	33	......	1	......	......	......	......	1	2	35
Total,	......	4	......	142	......	10	......	3	159	1	2	2	1	......	3	7	16	175
Beech Creek Coal and Coke Co.																		
Arcadia No. 1,	Indiana,	1	......	50	......	2	......	1	54	......	1	......	......	......	......	2	3	57
Arcadia No. 2,	Indiana,	1	......	75	......	4	1	1	82	......	1	......	......	......	1	3	5	87
Arcadia No. 3,	Indiana,	1	......	12	......	1	......	1	15	......	1	......	......	......	......	2	2	17
Total,	......	3	......	137	......	7	1	3	151	......	3	......	......	......	1	6	10	161
Clfd. & Cush Creek C. & C. Co.																		
Cush Creek No. 1,	Indiana,	1	......	40	......	1	......	......	42	......	1	......	......	......	1	1	3	45
Cush Creek No. 2,	Indiana,	......	......	6	......	......	......	......	6	......	......	......	......	......	1	1	2	8
Total,	......	1	......	46	......	1	......	......	48	......	1	......	......	......	2	2	5	53
Philadelphia C. & C. Co.																		
National No. 1,	Clearfield,	1	......	59	......	3	1	2	66	......	2	1	1	......	1	3	8	74
National No. 2,	Clearfield,	......	......	14	......	1	......	......	15	......	......	......	......	......	......	3	3	18
Total,	......	1	......	73	......	4	1	2	81	......	2	1	1	......	1	6	11	92
Irvona Coal Co.																		
Irvona No. 3,	Clearfield, }	2	......	165	......	13	5	7	192	1	3	7	......	......	2	36	49	241
Irvona No. 4,	Clearfield, }																	
Total,	......	2	......	165	......	13	5	7	192	1	3	7	......	......	2	36	49	241
Blaine Run Coal Co.																		
Blaine Run No. 1,	Clearfield,	1	......	80	......	5	1	1	88	......	1	......	1	......	2	2	6	94
Blaine Run No. 2,	Clearfield,	1	......	22	......	1	......	......	24	......	......	......	1	......	......	1	2	26
Total,	......	2	......	102	......	6	1	1	112	......	1	......	2	......	2	3	8	120
S. Hegarty's Sons.																		
Oakland No. 1,	Clearfield,	1	......	77	1	4	......	......	83	1	1	1	1	......	2	2	8	91
Oakland No. 2,	Clearfield,	1	......	9	......	1	......	......	11	1	......	......	......	......	......	1	2	13
Total,	......	2	......	86	1	5	......	......	94	2	1	1	1	......	2	3	10	104

TABLE III—Continued.

Names of Operators and Collieries.	County.	Occupations of Persons Employed Inside.								Occupations of Persons Employed Outside.								Grand total inside and outside.
		Inside foremen or mine bosses.	Fire bosses.	Miners.	Miners' laborers.	Drivers and runners.	Door boys and helpers.	All other employes.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	Employed in the manufacture of coke.	Superintendents, bookkeeper and clerks.	All other employes.	Total outside.	
Peale, Peacock & Kerr.																		
Bloomington No. 3,	Clearfield,	1	......	31	......	3	......	......	35	......	......	......	......	......	2	2	4	39
Bloomington No. 4,	Clearfield,	......	......	65	......	6	3	1	75	......	1	1	1	......	......	2	5	80
Bloomington No. 5,	Clearfield,	1	......	120	......	5	3	5	134	......	1	2	1	......	......	3	7	141
Total,	......	2	......	216	......	14	6	6	244	......	2	3	2	......	2	7	16	260
S. A. Rinn.																		
Adrian No. 4,*	Jefferson,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Kurtz & Rinn.																		
Walston No. 5,	Jefferson,	1	......	140	......	6	1	3	151	......	2	3	......	......	2	2	9	160
W. A. Preston.																		
Penn,	Jefferson,	1	......	40	......	4	3	1	49	......	1	......	......	......	1	2	4	53
Jefferson & Clearfield C. & I. Co.																		
Sykes shaft,	Jefferson,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
H. A. Bowers.																		
Hillman,	Indiana,	1	......	43	......	4	......	......	48	......	2	......	1	......	2	......	5	53
Reakirk Bros. & Co.																		
Penn,	Indiana,	1	......	50	2	5	......	......	58	......	1	......	......	......	1	4	6	64

Logan Coal Co. Fuller Run,	Indiana,	1	......	17	1	2	......	......	21	......	1	......	......	......	1	2	4	25
Gypsy Coal Co. Gipsy,	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Ellsworth-Dunham Coal Co. Victor No. 11,	Indiana,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Cowanshannock Coal Co. Yatesboro Nos. 1 and 2,	Armstrong,	1	......	388	80	3	4	20	496	2	6	8	2	......	5	45	68	564
Burnside Coal Co. Burnside,	Clearfield,	1	......	60	......	4	......	1	66	......	1	......	......	......	1	1	3	69
Clearfield & Cambria C. & I. Co. Clearfield,	Clearfield,	1	......	30	2	2	......	......	35	......	1	......	1	......	2	......	4	39
Mosher & Jose. Wilson Run,	Clearfield,	1	......	20	......	1	......	......	22	......	......	......	......	......	......	1	1	23
Coalport Coal Co. Superior,	Clearfield,	1	......	30	......	1	1	......	33	......	......	......	......	......	......	......	......	33
Weaver & Ettla. O'Shanter,	Clearfield,	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Glasgow Coal Co. Glasgow,	Cambria,	1	......	12	......	1	......	......	14	......	......	1	......	......	1	2	4	18
Joseph Smittle. Pleasant Hill,	Cambria,	1	......	26	......	1	......	......	28	......	......	......	......	......	1	......	1	29
W. J. Nicolls. Mountaindale,	Cambria,	1	......	74	......	5	1	1	82	......	......	1	......	......	1	14	16	98
Fred. Bland. Blands,	Cambria,	1	......	26	......	4	......	1	32	......	1	......	......	......	1	......	2	34
Harbison-Walker Co. Harbison-Walker,	Cambria,	1	......	20	......	2	......	1	24	......	......	......	......	......	......	2	2	26
Bellwood Coal Co. Great Bend,	Cambria,	1	......	49	2	6	......	2	60	......	1	......	1	......	......	1	3	63
Max Frick. Frick,	Cambria,	1	......	56	1	4	......	......	62	1	1	......	1	......	......	......	3	65
Grand total,	......	61	6	5,806	211	387	100	327	6,898	13	82	128	26	......	58	419	726	7.624

TABLE III—Continued.

Names of Operators.	County.	Number of Days Worked in Each Month.											
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Rochester and Pittsburg Coal and Iron Co.,	Jefferson,	24.3	22	24.66	23.66	24	24	24.33	23.66	22.66	25	24.33	22.66
Berwind-White Coal Mining Co.,	Jefferson,	24.25	20.75	19.20	20	18	10.50	12	12	11	16	14	16.50
John McLeavy & Co.,	Jefferson,	25	13.50	15	13	15	23	12	8	17	27	18	10
Clearfield Bituminous Coal Corporation,	Indiana,	25	17	25	24.50	23.50	18.50	20	19.50	17.50	24	18	22
Urey Ridge Coal Co.,	Indiana,	14.66	6.33	10.66	6.66	5.66	13	11.50	11	13	15.50	12.50	14
Glenwood Coal Co.,	Indiana and Clearfield,	14	13.33	14.33	16.33	11	7.66	8.66	10.50	16	20	20	18
Indiana Coal Co.,	Indiana,	23	17	22	23	17	15	9.33	16.25	12.50	17.33	14	17.33
Beech Creek Coal and Coke Co.,	Indiana and Clearfield,	....	....	....	16	15.33	17	16.66	18.66	15	16.33	18	13.33
Clearfield and Cush Creek Coal and Coke Co.,	Indiana,	15	18	11.50	9	8	9	10.50	12	14	16	17	19
Philadelphia Coal and Coke Co.,	Indiana,	18	15	18	17	18	17	9	....	14	15	17	21
Irvona Coal Co.,	Indiana,	15	11	15	16	13	14	12	10	14	15	14	14
Blaine Run Coal Co.,	Clearfield,	22.50	8	12	....	....	11	14	18	18	16	16	16.50
S. Hegarty's Sons,	Clearfield,	17.50	12.50	20	20	17	16.33	11	13.50	17.50	18	14.50	17.50
Peale, Peacock & Kerr,	Clearfield,	16	11.66	18	17	7.66	15	17.33	11	11	14.33	15	15
S. A. Rinn,	Clearfield,	....	....	....	....	....	....	....	....	....	....	....	....
Kurtz & Rinn,	Clearfield,	21	20	22	24	22	22	21	20	17	23	20	24
W. A. Preston,	Jefferson,	20	17	19	19	18	11	12	13	16	24	19	20
Jefferson and Clearfield Coal and Iron Co.,	Jefferson,	....	....	....	....	....	....	....	....	....	....	....	....
H. A. Bowers,	Jefferson,	....	....	....	....	....	....	....	....	18	27	25	25
Reakirt Bros. & Co.,	Jefferson,	23	13	25	19	9	7	9	13	15	13	15	19
Logan Coal Co.,	Indiana,	....	....	....	....	....	20	23	14	21	21	21	16
Glosy Coal Co.,	Indiana,	....	....	....	....	....	....	....	....	....	....	....	....
Ellsworth-Dunham Coal Co.,	Indiana,	....	....	....	....	....	....	....	....	....	....	....	....
Cowanshannock Coal Co.,	Indiana,	25	24	26	25	26	25	24	26	25	26	25	25
Burnside Coal Co.,	Indiana,	22	16	14	20	12	7	8	6	7	6	15	15
Clearfield and Cambria Coal and Coke Co.,	Armstrong,	5	8	15	10	10	15	10	10	16	6	5	10
Mosher & Jose,	Clearfield,	....	....	....	....	....	....	....	....	....	23	23	23
Coalport Coal Co.,	Clearfield,	....	....	....	4	7	17	10	15	17	16	16	13
Weaver & Ettla,	Clearfield,	....	....	....	....	....	....	....	....	....	....	....	....
Glasgow Coal Co.,	Clearfield,	....	....	....	....	....	....	....	....	....	18	16	19
Joseph Smittle,	Clearfield,	25	21	23	22	22	15	23	23	24	24	22	21
W. J. Nicolls,	Cambria,	22	14	19	20	21	22	20	19	22	22	23	21
Fred. Bland,	Cambria,	24	20	23	22	21	20	19	20	21	24	24	22
Harbison-Walker Co.,	Cambria,	27	24	26	26	21	25	26	27	25	27	25	25
Bellwood Coal Co.,	Cambria,	24	14	22	20	10	8	13	16	17	21	16	14
Max Frick,	Cambria,	20	14	17	15	14	14	20	17	16	20	16	16

TABLE IV—List of fatal accidents that occurred in and about the mines of the Twelfth Bituminous District for the year ending December 31, 1901.

Date of accident.		Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Number of widows.	Number of orphans.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
*Feb.	5	Jno. W. Powell,	Welsh,	Driver,	27	M.	1	1	Adrian,	Jefferson,	Fatally injured; caught between a car and pillar.
	*11	Mike Bisco,	Austrian,	Miner,	28	S.	....	....	Burnside,	Clearfield,	Killed by a fall of roof.
	*12	Garman Ferris,	Italian,	Miner,	31	M.	1	2	Walston No. 3,	Jefferson,	Instantly killed by the same fall of slate.
	*12	Antonio Rabbie,	Italian,	Miner,	25	S.	..	....	Walston No. 3,	Jefferson,	
	*12	Joseph Mancuse,	Italian,	Miner,	21	S.	....	....	Walston No. 3,	Jefferson,	
*March	2	Stanley Jedora,	Pole,	Scraper,	21	S.	....	....	Eleanora No. 2,	Jefferson,	Instantly killed by a fall of top coal.
	*16	Joseph Whim,	Slav,	Scraper,	25	M.	1	1	Walston No. 3,	Jefferson,	Instantly killed; caught under a fall of coal.
*May	2	Steve Legaso,	Austrian,	Loader,	48	M.	1	1	Eleanora No. 2,	Jefferson,	Instantly killed by the same fall of roof.
	*2	John Klingo,	Austrian,	Loader,	37	M.	1	....	Eleanora No. 2,	Jefferson,	
	*14	Edward Jepson,	English,	Miner,	33	M.	1	7	Irvona No. 3,	Clearfield,	Instantly killed by a fall of roof.
June	27	Angelo Pyne,	Italian,	Miner,	28	M.	1	1	Walston No. 5,	Jefferson,	Killed by fall of roof.
July	17	John Black,	Scotch,	Trackman,	39	M.	1	2	Yatesboro,	Armstrong,	Killed by electric shock.
Aug.	16	John Readeye,	Hungarian,	Driver,	35	M.	1	6	Adrian No. 1,	Jefferson,	Killed by fall of coal.
Sept.	13	Charles Lamb,	American,	Driver,	17	S.	....	....	Mountaindale,	Cambria,	Killed by fall of slate.
Oct.	4	Ben Goon,	American,	Miner,	19	S.	....	....	Irvona No. 3,	Clearfield,	Fatally injured by coal rolling on him.
	19	Francis Yolwa,	Italian,	Miner,	44	M.	1	3	W. Eureka No. 10,	Jefferson,	Killed by a fall of roof.
Nov.	1	Dominico Scripic,	Italian,	Miner,	40	M.	1	2	Walston No. 3,	Jefferson,	Killed by mine cars.
	4	Pete Lobash,	Slav,	Loader,	34	M.	1	2	Eleanora No. 2,	Jefferson,	Neck broken by a fall of coal.
	12	Norman Fyke,	American,	Laborer,	17	S.	....	....	Sykes shaft,	Jefferson,	Head crushed by falling timber.
Dec.	12	James Fisher,	Pole,	Miner,	49	M.	1	6	Bloomington No. 4,	Clearfield,	Killed by fall of slate.

*These accidents occurred in the Fourth District before rearrangement of Districts, May 15, 1901.

TABLE V—List of non-fatal accidents that occurred in and about the mines of the Twelfth Bituminous District for the year ending December 31, 1901.

Date of accident.	Name of Person.	Nationality by birth.	Occupation.	Age.	Married or single.	Name of Colliery.	County.	Nature and Cause of Accident in Brief.
*Jan. 1	Natal Scueman,	Italian,	Miner,	45	M.	Walston No. 5,	Jefferson,	Collar bone broken by fall of coal.
*7	Joseph Said,	Italian,	Miner,	36	M.	Adrian No. 1,	Jefferson,	Collar bone broken; car caught him against a prop.
*8	Jacob Copets,	Pole,	Miner,	40	M.	Adrian No. 1,	Jefferson,	Ankle, knee and shoulder severely injured by fall of slate.
*Feb. 18	Jake Rosenburg,	American,	Miner,	25	M.	Irvona,	Clearfield,	Leg broken by a fall of coal.
*28	Joseph Babyak,	Pole,	Machine cutter,	28	S.	Yatesboro,	Armstrong,	Injured by a fall of slate.
*March 11	David Anderson,	Scotch,	Miner,	30	M	Elk Run shaft,	Jefferson,	Injured by a fall of slate.
*14	Evan Moline,	Swede,	Miner boy,	14	....	West Eureka No. 11,	Jefferson,	Arm broken by fall of bone coal.
*April 5	Andrew Kuntze,	Hungarian,	Scraper,	35	S.	Adrian No. 1,	Jefferson,	Injured about body by fall of coal.
*8	James McCloskey,	American,	Miner boy,	15	....	Eleanora No. 2,	Jefferson,	Leg fractured by fall of coal.
*9	Giacomo Bruto,	Italian,	Scraper,	22	S.	Adrian No. 1,	Jefferson,	Leg broken by a fall of coal.
*13	Daniel Bazaine,	Austrian,	Miner,	27	M.	Eleanora No. 2,	Jefferson,	Leg broken by fall of coal.
*20	Adam Sulich,	Slav,	Miner,	34	M.	West Eureka No. 10,	Jefferson,	Body crushed by fall of coal.
*May 2	J. W. Arnold,	American,	Miner,	40	M.	Frick,	Cambria,	Injured by fall of rock.
*9	John Shoughton,	Pole,	Miner,	32	S.	Florence,	Jefferson,	Leg broken by fall of slate.
27	Thomas Connors,	Irish,	Miner,	33	S.	Walston No. 3,	Jefferson,	Severely injured by fall of coal.
June 6	Fred. Halnsey,	American,	Miner,	58	M.	Mountaindale,	Cambria,	Leg broken and lacerated; caught between cars.
11	Sam Rope,	Italian,	Loader,	35	S.	Florence,	Jefferson,	Leg broken; fall of slate.
25	Geo. McGill,	American,	Miner,	17	S.	Walston No. 3,	Jefferson,	Thigh broken; fall of coal.
27	Peter Leno,	Italian,	Miner,	28	S.	Walston No. 3,	Jefferson,	Burned by powder. Peter Leno was emptying a five pound can of powder into another can, when a spark dropped from his lamp, causing the powder to explode.
27	Albert Leno,	Italian,	Miner,	17	S.	Walston No. 3,	Jefferson,	
27	Peter Priute,	Italian,	Miner,	17	S.	Walston No. 3,	Jefferson,	
28	James Fitzpatrick,	American,	Driver,	30	M.	Adrian No. 1,	Jefferson,	Foot bruised by car.
July 11	John Jones,	Welsh,	Spragger,	20	S.	Florence,	Jefferson,	Injured; squeezed between cars.
17	Mike Kearpon,	Slav,	Miner,	48	M.	Eleanora,	Jefferson,	Loss of right eye. Was breaking up a sand rock with dynamite, and as it hung fire he went back, thinking it had failed, when it exploded.

	23	Mike Zemba,	Pole,	Miner,	38	M	Eleanora,	Jefferson,	Shoulder dislocated by fall of roof.
	25	Robert Scofield,	English,	Miner,	53	M.	Burnside,	Clearfield,	Fingers mashed while trying to lift car on track.
	31	Charles Ostraskey,	Pole,	Miner,	25	S.	Florence,	Jefferson,	Arm broken by motor; was caught between motor and rib.
Aug.	2	Ginson Vasta,	Italian,	Miner,	38	S.	Adrian No. 1,	Jefferson,	Head cut and collar bone broken by fall of loose coal.
	6	John Ward,	English,	Miner,	33	S.	Eleanora,	Jefferson,	Leg broken by a fall of coal.
	12	Abe Smith,	American,	Miner,	48	M.	West Eureka No. 6,	Jefferson,	Head and face cut by a fall of slate.
	31	Alex. Wilson,	Scotch,	Miner,	40	S.	Adrian No. 1,	Jefferson,	Bruised ankle; fall of slate.
Sept.	5	Antonio Micaela,	Italian,	Miner,	20	S.	Walston No. 4,	Jefferson,	Burned by explosion of powder; while filling a cartridge a spark from a lamp fell into it.
	5	Peter Catanria,	Italian,	Miner,	17	S.	Walston No. 4,	Jefferson,	
	5	Tony Waytak,	Pole,	Miner,	18	S.	Florenee,	Jefferson,	
	11	Robert Laird,	Scotch,	Miner,	17	S.	Eleanora No. 3,	Jefferson,	Injured by cars.
	23	Daniel Riffner,	American,	Miner,	41	M.	Mountaindale,	Cambria,	Leg broken by fall of coal.
	28	Alex. Lipsie,	Scotch,	Miner,	21	S.	Eleanora No. 3,	Jefferson,	Shoulder fractured by a car.
Oct.	7	Steve Katch,	Hungarian,	Miner,	38	M.	Adrian No. 1,	Jefferson,	Leg broken by a fall of rock.
	8	Henry Campbell,	American,	Miner,	21	S.	Adrian No. 1,	Jefferson,	Leg crushed by fall of coal.
	9	P. P. Swanson,	Swede,	Miner,	55	M.	West Eureka No. 10,	Jefferson,	Ankle injured by fall of coal.
	9	Mike Flord,	American,	Pumper,	19	S.	Walston No. 3,	Jefferson,	Ankle sprained by fall of coal.
	15	James Ball,	English,	Driver,	22	M.	Eleanora No. 3,	Jefferson,	Burned by gas.
	15	Charles Burgh,	Swede,	Driver,	17	S.	West Eureka No. 10,	Jefferson,	Thigh dislocated between cars.
	25	James Bellaire,	Italian,	Loader,	51	M.	Florence,	Jefferson,	Arm broken; ran over by cars.
	26	James Jones,	Welsh,	Spragger,	18	S.	Florence,	Jefferson,	Collar bone broken by a fall of coal.
Nov.	5	William Engle,	American,	Trapper,	15	....	Florence,	Jefferson,	Squeezed about the hips by cars.
	5	Samuel Gallo,	Italian,	Miner,	29	M.	Florence,	Jefferson,	Foot injured by car.
	14	Alfen Parnell,	Italian,	Miner,	50	M.	Adrian No. 1,	Jefferson,	Bruised by fall of slate.
	16	Robert Caldwell,	Scotch,	Miner,	15	S.	Eleanora No. 3,	Jefferson,	Head cut; struck it against a cross bar.
	22	Paul Ganel,	Italian,	Miner,	39	M.	Florence,	Jefferson,	Leg broken by fall of rock.
	23	Mike Quarko,	American,	Oiler,	12	....	West Eureka No. 6,	Jefferson,	Leg bruised by fall of slate.
	25	John Jones,	American,	Spragger,	19	S.	Florence,	Jefferson,	Leg broken; struck by hoisting rope in tipple.
Dec.	2	Frank North,	English,	Miner,	16	S.	Urey No. 1,	Indiana,	Leg crushed between motor and prop.
	2	John Kasor,	Slav,	Miner,	40	M.	Urey No. 1,	Indiana,	Burned by powder. In emptying a can of powder a spark dropped from Kasor's lamp into the powder.
	5	Frank Mitomack,	Italian,	Miner,	35	M.	Florence,	Jefferson,	Struck his head against trolley wire and was considerably shocked.
	16	Isaac Johnson,	Swede,	Miner,	40	M.	West Eureka No. 11,	Jefferson,	Back injured by fall of bone coal.
	23	Stana Stanavova,	Slav,	Miner,	40	M.	Adrian No. 1,	Jefferson,	Leg fractured by a fall of coal.
	26	Dominic Polla,	Italian,	Miner,	40	M.	Walston No. 3,	Jefferson,	Leg fractured by a fall of coal.
	28	Joseph Smith,	American,	Miner,	23	S.	West Eureka No. 10,	Jefferson,	Leg broken by fall of slate.

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*Accidents occurred in Third, Fourth and Eighth Districts prior to May 15.

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COMMONWEALTH OF PENNSYLVANIA.

DEPARTMENT OF INTERNAL AFFAIRS, JAMES W. LATTA, SECRETARY.

THE LEGAL RELATIONS
BETWEEN THE
Employed and their Employers
IN PENNSYLVANIA,
COMPARED WITH THE
Relations Existing Between them in Other States,

By PROFESSOR ALBERT S. BOLLES.

Supplement to the 28th Annual Report of the Bureau of Industrial Statistics.

JAMES M. CLARK,
Chief of Bureau.

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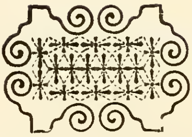

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4. The directors, president, manager or superintendent of a corporation are not fellow servants.

5. A person to whom an employer delegates his duty to supply machinery and appliances, make repairs, furnish suitable places for work and proper materials and instructions is not a fellow-servant.

   a. The employer's agent who selects machinery and appliances is not a fellow-servant.
   b. Nor his agent who furnishes places for employes.
   c. Or selects employes.
   d. Or makes repairs.
   e. Or in many cases an inspector.
   f. Or a train dispatcher.
   g. Or an agent who gives instructions.

6. A person may serve at the same time in the double capacity of an agent or representative of his employer and also as a fellow-servant.

7. A person who has authority to hire, pay, direct and discharge men is not a fellow-servant.

8. An employe who controls or directs the employment of another is in some states a fellow-servant; in others he is not.

9. In some states, servants, whether of the same or different rank, deriving authority from the same employer and engaged in the same business, even though in different departments, are fellow-servants.

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THE LEGAL RELATIONS EXISTING

BETWEEN

EMPLOYERS AND THEIR EMPLOYES.

CHAPTER I.

THE GENERAL RULE OF LIABILITY.

1. Courts are often required to determine the liability of employers to their employes for accidents happening while in their employment. In consequence of the wide diversity of industries, and the great development of industrial organizations during the last fifty years, many of the rules thus established by the courts cannot be easily applied, and, consequently, form uncertain and often difficult guides, both for employed and employers. In a very recent case (1) it was remarked that after all that had been written and spoken on the subject, it was still a difficult question to decide who was a fellow-servant. "Each case in the future, as heretofore, will have to be determined by its own particular facts." Every member of society is supposed to know the law, and, consequently, is held liable for any violation thereof; what, therefore, can be said of a system of law under which the ordinary rights and liabilities of those for whom it is designed cannot be clearly known until a court has determined in each particular case what they are? The least that can be said is that a legal system so radically defective is in great need of amendment. It is proposed therefore to show, as far as we may be able, what are the legal relations between employed and employers, for the double purpose of enabling these classes especially to gain a better understanding of them, and also to prepare the way for improving the law by statutory or other amendment.

2. It is one of the most fundamental of all legal rules that a man is not liable for the wrongs done by another. This is in harmony

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(1) Ward v. Odell Mfg. Co., 36 S. E. Rep. 194, 196.

with the judgment of mankind, for there is no more reason in holding B liable for the wrongs of A, than in requiring B to pay A's debts. This is too plain to require further discussion.

3. To this rule, however, there is an ancient exception. A master is liable for the wrongful and negligent acts of his servant that are done within the scope of his employment and while pursuing his master's business. This is known as the doctrine of respondeat superior. In the Roman law this doctrine was properly applied to the head of a family, because no action could be brought against his son or slave for his act or default. By the American and English law an employe is liable for his own act or default, consequently is has been said that the maxim respondeat superior, except by analogy, can have no place in a system of jurisprudence under which citizens have equal personal rights and liabilities.

4. This rule may be illustrated by describing the case of a railway engineer who rode by permission of a brakeman in one of the company's cars. Before finishing his journey he was killed, and his wife attempted to recover a money damage from the company. It defended on the ground that the brakeman, even though negligent in fulfilling the duty for which he had been employed, was acting entirely outside his province in permitting the engineer to ride, and, therefore, the company was not responsible for his act. Justice Danforth, in delivering the opinion of the court, declared that the law, for reasons of convenience, made a master liable for the act of his servant, even though, while performing the duty, he was guilty of a deviation, or of a failure to perform it in the safest and best manner. But when a servant, "instead of doing that which he is employed to do, does something which he is not employed to do at all, the master cannot be said to do it by his servant, and, therefore, is not responsible for the negligence of his servant in doing it." In other words, when the master has neither ordered the thing to be done, nor allowed the servant any discretion in the mode of doing it, neither in common justice, nor common sense, can the master be held responsible. In the case before the court the brakeman was never told, or authorized to carry any person, and if he consented to the engineer's going into the car, there was no evidence that in doing so he was acting in the line of his duty, or within the scope of his employment (2).

5. This ancient rule of respondeat superior was applied without exception until 1837. In that year Lord Abinger decided the famous case of Priestley v. Fowler (3), which has flooded England and America with more legal decisions than any other judicial deliverance in the vast domain of English and American jurisprudence.

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(2) Morris v. Brown, 111 N. Y., 318, 328.

(3) 3 Exch. 1.

What is the history of this controversy which has so long vexed the courts and cannot be settled? A butcher named Fowler employed Priestley, and, on the occasion of the accident which kindled this unending source of litigation, requested him to go with some goods in a van belonging to himself, conducted by another servant. Priestley went as requested, but the van was overloaded and broke down, and Priestley was thrown off, sustaining severe injuries. He sued Fowler, and the court decided, Lord Abinger rendering the decision, that he was not liable. The reasoning on which this decision was founded may be given:

"If the master be liable to the servant in this action, the principle of that liability will be found to carry us to an alarming extent. He who is responsible by his general duty, or by the terms of his contract, for all the consequences of negligence in a matter in which he is the principal, is responsible for the negligence of all his inferior agents. If the owner of the carriage is, therefore, responsible for the sufficiency of his carriage to his servant, he is responsible for the negligence of his coachmaker, or his harnessmaker or his coachman. The footman, therefore, who rides behind the carriage, may have an action against his master for a defect in the carriage, owing to the negligence of the coachmaker, or for a defect in the harness, arising from negligence of the harnessmaker, or for drunkenness, negligence or want of skill in the coachman; nor is there any reason why the principle should not, if applicable in this class of cases, extend to many others. The master, for example, would be liable to the servant for the negligence of the chambermaid, for putting him in a damp bed; for that of the upholsterer for sending in a crazy bedstead; for the negligence of the cook in not properly cleaning the copper vessels used in the kitchen; of the butcher in supplying the family with meat of a quality injurious to the health; of the builder for a defect in the foundation of the house, whereby it fell and injured both the master and the servant by the ruins. The inconvenience, not to say the absurdity, of these consequences, affords a sufficient argument against the application of this principle to the present case. But, in truth, the mere relation of the master and the servant can never imply an obligation on the part of the master to take more care of the servant than he may reasonably be expected to do of himself. He is no doubt bound to provide for the safety of his servant, in the course of his employment, to the best of his judgment, information and belief. The servant is not bound to risk his safety in the service of his master, and may, if he thinks fit, decline any service in which he reasonably apprehends injury to himself; and in most of the cases in which danger may be incurred, if not in all, he is just as likely to be acquainted with the probability and extent of it as his master."

6. It may be noted that Lord Abinger's chief argument for his decision was a presentation of the absurb consequences that might flow from the adoption of the opposite rule. The argument has been characterized by an eminent jurist and legal writer, Judge Redfield, as a "most ingenious attempt at reductio ad absurdum, where the learned Chief Baron, among other ingenious speculations, supposes some fearful consequences if the master were to be held liable for the negligence of the chambermaid in putting the servant into wet sheets." (4)

7. In the United States this question was first answered by the Supreme Court of South Carolina, in Murray v. South Carolina R. Co. (5) The decision was rendered only a year after the Priestley case, and the American judges knew nothing of the English decision at the time of rendering their own. The Murray suit was brought by a fireman for an injury caused by the negligence of an engineer with whom he was associated in running an engine. The reasoning of the court in this case may be briefly given. In a concurring opinion Chancellor Johnson remarked: "The foundation of all legal liability is the omission to do some act which the law commands, the commission of some act which the law prohibits, or the violation of some contract by which the party is injured. There is no law regulating the relative duties of the owners of a steam car, and the persons employed by them to conduct it. The liability, if any attaches, must thereafter arise out of contract. What was the contract between these parties? The plaintiff, in consideration that the defendants would pay him so much money, undertook to perform the service of fireman on the train. This is all that is expressed. Is there anything more implied? Assuming that the injury done was in consequence of the negligence of the engineer, the defendants would not be liable unless they undertook to answer for his diligence and skill. Is that implied? I think not. The law never implies an obligation in relation to a matter about which the parties are or may, with proper diligence, be equally informed. No one will ever be presumed to undertake for that which a common observer would at once know was not true. The common case of a warranty of the soundness of a horse, notoriously blind, may be put in illustration. The warranty does not extend to the goodness of the eyes, because the purchaser knew, or might have known, with proper care, that they were defective. Now, the plaintiff knew that he was not to conduct the train alone. He knew that he was to be placed under control of the engineer. He knew that the employment in which he was engaged was perilous, and that its success was dependent upon the common efforts of all the hands,

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(4) Redfield on Railways, 566; 6th Ed.

(5) 1 McMullan, 385.

and with proper diligence and prudence he might have been as well, and it does not follow that he might not have been better informed, than the defendants, about the fitness and security of all the appointments connected with the train. If he was not, it was his own want of prudence, for which defendants are not responsible. If he was, he will be presumed to have undertaken to meet all the perils incident to the employment."

8. Four years afterward, in 1842, the question came before the highest court of Massachusetts (6), in the case of an engineer who sued to recover for an injury occasioned by the carelessness of a switch-tender employed by the company. The reasoning of Chief Justice Shaw has been so generally followed by other courts that it will be presented:

"In considering the rights and obligations arising out of particular relations, it is competent for courts of justice to regard considerations of policy and general convenience, and to draw from them such rules as will, in their practical application, best promote the safety and security of all parties concerned. This is, in truth, the basis on which implied promises are raised, being duties legally inferred from a consideration of what is best adapted to promote the benefit of all persons concerned, under given circumstances. Where several persons are employed in the conduct of one common enterprise or undertaking, and the safety of each depends much on the care and skill with which each other shall perform his appropriate duty, each is an observer of the conduct of the others, can give notice of any misconduct, incapacity or neglect of duty, and leave the service if the common employer will not take such precautions, and employ such agents as the safety of the whole party may require. By these means the safety of each will be much more effectually secured than could be done by a resort to the common employed for indemnity in case of loss by the negligence of each other. Regarding it in this light, it is the ordinary case of one sustaining an injury in the course of his own employment in which he must bear the loss himself, or seek his remedy, if he have any, against the actual wrongdoer."

9. The question was not raised before the Supreme Court of Pennsylvania until 1854, when Ryan v. Cumberland Valley R. was decided (7). Ryan and several others were employed by the company to repair their road, and in doing so used gravel dumping cars that were moved by locomotive power. Ryan boarded in Chambersburg, four miles distant from his place of work and was injured by the dumping of a car while riding therein from his work. He maintained that it was the duty of the engineer or conductor to have secured the car properly before starting. The opinion of the court

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(6) Farwell v. Boston & Worcester R., 4 Met. 49.

(7) 23 Pa. 384.

was delivered by Justice Lowrie. After remarking that Ryan did not sue in the relation of a passenger, but as a servant injured by the carelessness of a fellow-servant, he proceeded to discuss the grounds of recovery. The judge continued:

"This alleged duty did not grow out of any contract between the plaintiff and the defendants, else the contract would have been charged as an essential and relevant bond of their relation, which has not been done. If it was a duty which the engineer owned to the plaintiff in any way, then the action ought to be brought against him for the breach of it. If he owed it to the defendants, then they alone can complain of its non-performance. The duty must, therefore, be alleged as that of the defendants to the plaintiff. In what form shall we put it, or how shall we define it? Is it that, when persons are employed to work for others, the employers are bound to see that the instruments of their work are and shall continue in a condition to be used with safety? Then the coachman, the wagoner and the carter, who ought to know more about the vehicles which they use than their employers do, have a practical warrantry that they are in good order, though practically we know that many of them are nearly worn out; the wood-chopper and the grubber are insured that their axe or mattock shall not injure them by flying off the handle; the engineer, the miller, the cotton-spinner, and the wool-carder have a guarantee for the accidents that may befall them in the use of the machinery which they profess to understand, and which they ought so to understand as to be able to inform their employers when it is out of order.

"If this be so, then the care and skill required of workmen is reduced very much below what is ordinarily expected of them. If there be any distinction between any of the cases put and the one in hand it is too narrow to be made the foundation of a new rule, or to cancel the force of the analogy which they afford. Certainly such a duty has never been considered as belonging to these relations, and, therefore, it cannot be law.

"The only way left for defining the supposed duty is to allege that employers are liable when any of those employed by them are injured by the carelessness of their fellow laborers. Though this proposition has never been decided upon by this court, it has often been considered elsewhere and decided in the negative, and we know but one case which seems to affirm it.

"But it must be conceded that many of the relations of life are instituted in the most general terms, and that the special duties of each party are so well understood in society that they are left entirely undefined in the contract, and each is presumed to have undertaken them without their being formally specified. Certainly no one will pretend that the duty here insisted upon has in any way become part of this contract, for no one so understands it, and no one would so contract if requested.

"There is, therefore, no way left but to allege that the law has made it a duty of a master to see that his servants do not injure each other by their carelessness. There is no statute of this purport, and, therefore, the allegation must be that it is a part of the common law. But the common law consists of the general customs of the people, and of the maxims and principles on which they act, and it is conclusive against the rule contended for that it has never been found among these, and is not deducible from them.

"But the duty insisted upon is substantially one of protection, which cannot exist without implying the correlative one of dependence or subjection. The relations of husband and wife, parent and child, are in law relations of protection and dependence; and there are those which are so in fact, as where a weak-minded person submits himself to the direction of another, and here the law interferes to protect against an undue exercise of influence and power. And there are others, as the Sunday laws and the laws regulating the hours of labor in particular occupations, whereby the law protects men against the danger arising from undue competition; but the strictness used in defining this relation, as belonging to special cases, implies that it has no wider existence.

"There is no relation of protection and dependence between master and servant, or of confidence in the institution of the relation; we speak not of master and apprentice. The master is no Roman client or feudal villain, with a lord to protect him. Both are equal before the law, and considered equally competent to take care of themselves, and very often the servant is the more intelligent of the two.

"The argument that the law implies a warranty that one servant shall not be injured by the carelessness of another, is only another way of stating the proposition that the law imposes the duty of protection, and it must be set aside by the same answer.

"And what would be the value of such a rule? If it exists at all, it must grow out of the relation and affect all persons standing in it; and this would change all our ideas concerning the relation of master and servant. Every man must have his own business, whether as master or as servant, and there is no business without its risks. Where many servants are employed in the same business, the liability to injury from the carelessness of their fellows, is but an ordinary risk, against which the law furnishes no protection but by an action against the actual wrongdoer. It would violate a law of nature if it should provide an immunity to any one against the ordinary dangers of his business, and it would be treating him as incapable of taking care of himself.

"If we declare that workmen are warranted against such carelessness, then the law places all careless men, which means all badly educated or badly treated men, and it places even those who have not acquired a reputation for care, under the ban of at least a partial exclusion from all work. And this is the ordinary result of all undue attempts to protect by law one class of citizens against another. It is done at a practical sacrifice of liberty on the part of those intended to be protected, and to the embarrassment of the common business of life, by imposing upon the people a rule of a new and unusual character which may require half a century to become fitted like a custom, and adapted to the customs already existing which it does not have the effect of annulling."

10. Although adopted by every state in the Union, the rule has not been adopted in Scotland, and the opinion of the Scottish court is forceful and well worth giving. Lord Cockburn admits that in England, where "a person is injured by the culpable negligence of a servant, that the servant's master is liable in reparation, provided the injured person was merely one of the public, but that he is not so responsible if the injured person happened to be a fellow-workman of the delinquent servant. It is said, as an illustration of this, that if a coachman kills a stranger by improper driving, the employer of the coachman is liable; but that he is not liable if the coachman only kills the footman." His lordship added that the rule seemed to be recommended 'on account of its own inherent justice.' He then proceeded to attack the rule in the following fashion: "This last recommendation fails with me, because I think the justice of the thing is exactly in the opposite direction. I have rarely come upon any principle that seems less reconcilable to legal reason. I can conceive some reasonings for exempting the employer from liability altogether, but not one for exempting him only where those who act for him injure one of themselves. It rather seems to me that these are the very persons who have the strongest claim upon him for reparation, because they incur danger on his account, and certainly are not understood, by our law, to come under any engagement to take these risks upon themselves." (8)

CHAPTER II.

THE NATURE OF THE CONTRACT.

1. An employer, therefore, is not an insurer against all accidents that happen to his employes. When one enters into the service of another he takes on himself, in consideration of the compensation he is to receive, the ordinary risks of his employment, including

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(8) Dixon v. Ranken, 1 Am. Railroad Cases 569.

the negligence of those employed around him. (9) In one of the cases, the court remarked that the rule rested upon the "sound principle that each one who enters upon the service of another, takes on himself all the ordinary risks of the employment in which he engages, and that the negligent acts of his fellow-workmen, in the general course of his employment, are within the ordinary risks." (10) On another occasion the same court remarked: "If the risk is an ordinary one, the employer is not liable, even if the employe did use ordinary care. In all such cases the risk of injury is one of the hazards which the employe assumes when he engages in the service to which it is incident. This has always been the law." (11)

2. Nevertheless, Justice Earl, of the New York Court of Appeals, has declared that this assumption is a fiction. We will quote his words: "To enforce the supposed public policy, a fiction has been invented by which the servant is said to assume all the risk of the service in which he engages, which include the risks of injuries caused by the negligence of co-servants engaged in the same common employment." (12) Whether this be a fiction or not there is no other assumption more deeply embedded in modern jurisprudence.

3. The courts have often said that the employe receives higher wages than would have been paid had his employer insured him against accidents. Thus, in Strange v. McCormick (13), Judge Laurie has remarked that "the law very properly presumes that every man who undertakes a business understands its character and the tools and machinery with which it is to be done, and on this account it is a fair presumption that he undertakes the risk for what he considers a sufficient compensation." This also is a pure judicial theory.

No evidence can be shown either to prove or disprove the assertion. It may be true or it may not be. It is a plausible theory, but nothing more. Perhaps if the employer had been held liable in all cases, he would not have offered as high remuneration; perhaps, instead of lowering it, he would have been more careful in selecting his employes in order to escape responsibility and loss. One cannot help thinking that the rule promotes negligence, or, rather, is the worst possible for the exercise of care by the employer.

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(9) King v. Boston & Worcester R., 9 Cush. 112; Railroad Co. v. Fort, 17 Wall. 553; Burke v. Anderson, 69 Fed. 814; Schaub v. Hanibal & St. Joseph R., 106 Mo. 74; Fifield v. Northern R., 42 N. H. 225; Nash v. Nashua Iron Co., 62 N. H. 406; Volz v. Chesapeake & Ohio R., 95 Ky. 188; Yeomans v. Contra Costa Steam Nav. Co., 44 Cal. 71; St. Louis R. v. Triplett, 54 Ark. 289; Buckalew v. Tenn. Coal & Iron Co., 112 Ala. 146.

(10) Lewis v. Seifert, 116 Pa. 646.

(11) Northern Central R. v. Husson, 101 Pa. 1, 7.

(12) Crispin v. Babbitt, 81 N. Y. 529.

(13) 10 Am. Law Jour. 358.

Had he been held to a more stringent rule, doubtless he would have been more careful in his selection of workmen and appliances. As long as the consequences of his neglect can be visited on his employe, the motive is weakened for exercising care.

4. It may be if employers had been held as insurers that they would have sought to exempt themselves from liability by special agreement. If they had, the question may be asked, would the agreement have been legal? It is well known that in some states common carriers can exempt themselves by special contract from the negligence of their agents and servants; in other states they cannot thus evade their liability. The exemption prevails in England, Canada, New York, New Jersey, Connection and West Virginia (14); but in Pennsylvania, Alabama, Indiana, Minnesota, Maine, Arkansas, Kansas, Virginia, Maryland, Tennessee and Ohio common carriers cannot relieve themselves from responsibility for their negligence by a contract, whatever be the form, and this, too, is the federal rule (15).

5. Let us begin by inquiring what the courts of Pennsylvania have said in the way of answer to this question. In the case of Mitchell v. Pennsylvania R. (16), Judge Taylor believed that the more lenient rule of liability which at that time was applied to carriers ought logically to be extended to all employers. Yet, on another occasion, Justice Lowrie remarked that, if employers were held liable to an employe for the negligence of a fellow employe "such a rule could have very little application to great corporations, for they would immediately act on the maxim modus et consentio vincunt legem and provide against it in their contracts."

If the courts of Pennsylvania had permitted carriers to relieve themselves from the consequences of their negligence to shippers, as they have been relieved by court or legislature in England, New York, New Jersey and some other states, then they might have logically extended the doctrine to negligence in other directions, but this is not the first occasion in which harmony of the law has been disregarded. It is difficult, however, to frame a good reason for permitting a contract of exemption from the consequences of negligence to be made with one class of employes and not with others or the public.

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(14) McCauley v. Furness Railway Co., L. R. 8 Q. B. 57; Hall v. Northeastern R., L. R. 10 Q. B. 437; Duff v. Great Northern R., L. R. 4 Irish 178; Alexander v. Railroad, 3 Strob. 594; Wells v. Railroad Co., 24 N. Y., 181; Magnin v. Dinsmore, 56 N. Y. 168; Kinney v. Railroad Co., 32 N. J. Law 407; Griswold v. Railroad Co., 53 Conn. 371; Skeels v. Baltimore & Ohio R., 3 W. Va. 566.

(15) Pennsylvania R. v. Butler, 57 Pa. 335; Mobile & Ohio R. v. Hopkins, 41 Ala. 486; Hissong v. Railroad Co., 91 Ala. 514; Ohio & Miss. R. v. Selby, 47 Ind. 471; Jacobus v. Railroad Co., 20 Minn. 125; Willis v. Railroad Co., 62 Me. 488; Kansas Pacific R. v. Peavey, 29 Kan. 169; Perry v. Railway Co., 44 Ark. 383; Johnson v. Railroad Co., 86 Va. 975; State v. Western Md. R., 63 Md., 433; Memphis & Charleston R. v. Jones, 2 Head 517; Lake Shore R. v. Spangler, 44 Ohio St. 471; Railroad Co. v. Lockwood, 17 Wall 357.

(16) 1 Am. Law Reg. 717.

6. The Supreme Court of Arkansas has given a reason for the distinction (17). In that state by the common law, a common carrier can exempt himself by contract from all liability for his negligence to an employe, but not to other persons. A brakeman, therefore, who made a contract with a railroad company, taking on himself all the risk incident to his position and relieving it from all liability for its negligence arising from collisions, from defective machinery and the carelessness or misconduct of the company's employes, could not recover for an injury caused by the company's negligence in employing another incompetent servant. And this is the reasoning of the court: "A common carrier, or a telegraph company, cannot, by pre-contract with its customers, relieve itself from liability for its own negligent acts. This, however, may be on grounds of its public employment. The validity of the contract before us is not affected by such considerations. The relation existing between the parties to it is essentially a private relation—that, namely, of master and servant. The negligence of a fellow-servant is not in fact and in morals the negligence of the master, although by virtue of a statute it may be imputed to the master. It is impossible for the master always to be present and control the action of his servants; hence, a stipulation not to be answerable for their negligence beyond the selection of competent servants in the first instance, and the discharge of such as prove to be reckless or incompetent might be upheld as reasonable and binding."

There are two distinctions set forth in this opinion, and both are important. One distinction is that an employer may relieve himself from responsibility to an employe for the negligence of a co-employe, but not for imperfect or dangerous appliances, materials or machinery supplied by him to his employes. The reason for this distinction clearly is, if an employe proves to be negligent, though there was nothing to predicate this of him in the beginning, he is not morally liable for such negligence, and therefore may be permitted by the law to relieve himself of all responsibility therefor, but such a permission will not be extended to relieve him from the consequences of selecting imperfect appliances, etc., or even employes, if he knows when employing them, of their incompetency.

The other distinction is open to far more criticism. An employer, so the court contends, may relieve himself from the consequences of his negligence to one of his employes to the extent above mentioned, but cannot relieve himself with the public. Is the public safety of any greater worth than that of an individual? The carrier may not be morally responsible to shipper or passenger for the negligence of an employe, but is held legally responsible therefor; why should not the same degree of responsibility be fastened on him with respect to one of his employes? Are they less worthy of judicial consideration than the public sparrows?

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(17) Little Rock & Fort Smith R. v. Eubanks, 48 Ark. 460.

Furthermore, what is the public? Anything more than a number of individuals? And is the number to whom the rule is likely to be applied by a railroad company any more numerous than their own employes? Elsewhere this decision will be further considered.

7. In several states the question of relieving an employer by express contract has received judicial determination, and one of these is Alabama. In Louisville & Nashville R. v. Orr (18), the court declared that railroads like other corporations and persons had the right to adopt reasonable rules and regulations for the government of their employes, and for their own protection; but they cannot stipulate for immunity from liability for their own wrongful negligence. A rule which imposes upon an employe to look after and be responsible for his own safety contravenes the law itself, which fixes the liability of railroads for any negligence causing injury or death to their employes.

8. In Kansas, this question has risen under a statute (19). Prior to 1874 the common law rule prevailed in that state, that a master was not liable to his servant for an injury happening in consequence of the negligence of a fellow-servant engaged in the same general employment. In that year, however, the legislature changed the common law rule and made a railroad corporation liable for the negligence of an employe who injured another. After enacting the statute the railroad companies sought to set it aside with their employes by contracts releasing their companies from all liability. The question soon afterwards was raised whether such waivers were effective. The court declared that it was a familiar principle of law that a contract made in violation of a statute was void, and also that agreements contrary to the policy of statutes fell under the same ban. While the reason for the rule of the common law, that the master ought not to be responsible for injuries inflicted upon one servant by the negligence of another servant in the same common employment, seemed plausible and correct theoretically, yet it might be assumed that the legislature did not find in the partial operation of the rule sufficient security to persons engaged in the hazardous business of operating railroads. For the protection of the lives and limbs of the employes of such companies, therefore, the legislature deemed it necessary to enact the statute making railroad companies liable for all damages done to any of their em-

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(18) 91 Ala. 548.

(19) Kansas Pacific R. v. Peavey, 29 Kan. 169, 175.

ployes in consequences of the negligence of a co-employe. "Now, if the statute was enacted for the better protection of the life and limb of railroad employes, it would be against public policy for the courts to sanction contracts made in advance for the release of this liability, especially when we consider the unequal situation of the laborer and his employer." Then the court used as an illustration the owners of coal mines, worked by means of shafts, who are required to make and construct escapement shafts in each mine for distinct means of ingress and egress for their employes. "Such a statute is for the benefit of employes engaged in working in coal mines; but the owner of such a mine would not be permitted to contract in advance with employes for operation of the mine in contravention of the provisions of the statute. The state has such an interest in the lives and limbs of its citizens that it has the power to enact statutes for their protection, and the provisions of such statutes are not to be evaded or revoked by contracts in contravention therewith. The general principle deduced from the authorities is, that an individual shall not be assisted by the law in enforcing a contract founded upon a breach or violation on his part of its principles or enactment; and this principle is applicable to legislative enactments, and is uniformly true in regard to all statutes made to carry out measures of general policy; and the rule holds equally good, if there be no express provision in the statute peremptorily declaring all contracts in violation of its provisions void in regard to statutes intended generally to protect the public interests, or to vindicate the public morals."

9. In Ohio, the question has arisen independently of any statute. In the case of the Railway Company v. Spangler (20), the court inquired whether it was competent for a railway company to stipulate with its brakesmen, at the time, and as a part of their contract of employment, that the company shall not be liable for the negligent acts of its conductors. After declaring that the rule of law governing the liability of railway employers to their employes was, that a railroad company was liable to an employe for an injury received through the negligence of another employe under whose control he was placed (21), the court added: "The policy of our law being well settled, it only remains for us to inquire whether railroad companies may ignore or contravene that policy by private compact wtih their employes, stipulating that they shall not be held to a liability for the negligence of their servants, which public policy demands shall attach to them. The answer is obvious. Such liability is not created for the protection of the employe simply, but has its reason and foundation in a public necessity and policy

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(20) 44 Ohio St. 471.

(21) Little Miami R. v. Stevens, 20 Ohio 415.

which should not be asked to yield or surrender to mere private interests and agreements."

10. In Alabama, another case has arisen upon a contract stipulating that the compensation paid "shall cover all risks incurred, and liability to accidents from any cause whatever, and if an employe is disabled by accidents or other cause, the right to claim compensation for injuries will not be recognized" (22). This was declared to contravene a statute providing that the employer was liable to answer in damages to the employe when the injury was caused by reason of the negligence of any person in the service or employment of the master or employer who had charge of any engine, car or train upon a railway. The stipulation was held to be opposed to public policy, and did not avail to secure non-liability for an injury caused to an employe by the railway's negligence or misconduct in the cases specified in the statute.

11. In Arkansas, too, in the case already described, it was held that a railroad company cannot release itself in advance from responsibility beyond the line or degree mentioned, namely, the consequences of a servant who was regarded as competent at the time of employing him. A stipulation, therefore, releasing the company from all liability with respect to its track, cars, machinery, materials, tools and appliances is void, and clearly against public policy. The reasoning of the court is worth adding: "The state has an interest in the lives and limbs of all its citizens. Laborers for hire constitute a numerous and meritorious class in every community, and it is for the welfare of society that their employers shall not be permitted, under the guise of enforcing contract rights, to abdicate their duties to them. The consequence would be that every railroad company and every owner of a factory, mill or mine, would make it a condition, precedent to the employment of labor, that the laborer should release all right of action for injuries sustained in the course of the service, whether by the employer's negligence or otherwise. The natural tendency of this would be to relax the employers carefulness in those matters of which he has the ordering and control, such as the supplying of machinery and materials, and thus increase the perils of occupations which are hazardous, even when well managed. And the final outcome would be to fill the country with disabled men and paupers, whose support would become a charge upon the counties or upon public charity." (23)

12. The same view has been taken by a federal court. In Roesner v. Herman (24), an employer, who was a manufacturer, made a con-

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(22) Hissong v. Richmond & Danville R., 91 Ala., 514; Richmond & Danville R. v. Jones, 92 Ala. 218.

(23) Little Rock & Fort Smith R. v. Eubanks, 48 Ark. 468.

(24) 10 Biss. 486.

tract with one of his employes whereby he was released from all liability to any employe for injury or death happening through another employe's negligence. Judge Gresham, declared that "when the employer's negligence in supplying his employe with unsafe machinery has caused the death of the latter, the law will not allow the employer to say as in effect he does in this answer. 'It is true that my machinery was defective and unsafe, and my negligence caused the death of my employe, but I am not liable to those who have suffered from the loss of his life, because I had a contract with him which secured to me the right to supply him with unsafe and defective machinery, and to be negligent.' Such a contract is void as against public policy."

13. In Tennessee, a case arose in 1857 about the hiring of two slaves. A railroad company made a contract with the owner, which contained the following stipulation: "And all risks incurred, or liability to accidents, whilst in said service, is compensated for and covered by the pay agreed upon; the said railroad company assuming no responsibility for damages from accident, or any cause whatever." (25) The court remarked that the language of the instrument was very strong, but must receive a reasonable and sensible construction. "It would be most absurd to suppose that it was the intention and understanding of the parties that the company should be protected from liability, not only against all the casualties to which the slave might be exposed in working on the road, but also against injuries caused by third persons in which the company had no participation, but likewise against injury or loss occasioned by the wilful wrong, or gross negligence of the company itself, or its agents. Such a construction of the agreement is altogether inadmissible. The stipulation is not available for the defendant against its own wilful wrong, or culpable negligence."

14. The same view is maintained by the Supreme Court of Virginia (26). In a case in which such an agreement had been made, and the counsel for the employing railroad company contended that it was legal, the court remarked that "it would be strange indeed if such a doctrine could be maintained. To uphold the stipulation in question would be to hold that it was competent for one party to put the other party to the contract at the mercy of its own misconduct, which can never be done lawfully where an enlightened system of jurisprudence prevails. Public policy forbids it, and contracts against public policy are void. Nothing is better settled, certainly in this court, than that a common carrier cannot by contract exempt himself from responsibility for his own or his servant's negligence in the carriage of goods or passengers for

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(25) Memphis & Charleston R. v. Jones, 2 Head 517.

(26) Johnson v. Richmond & Danville R., 86 Va. 875, 878.

hire. This is so independently of the code; and the principle which vitiates a stipulation for exemption from liability for one's own negligence is not confined to the contracts of carriers as such; it applies universally."

15. The question has been considered in New York. In 1891, the case of Purdy v. Rome & Watertown R. (27) came before the New York Court of Appeals for final determination. Purdy had made a formal agreement releasing the railroad from all liability to him "by reasoning the negligence of the company, its agent, servants and employes;" and the consideration for doing so was his "employment and the compensation agreed to be paid therefor." The agreement was declared void for lack of consideration. "It constituted a simple guaranty on the part of the plaintiff to the defendant, relieving it from a liability or responsibility which there existed in favor of plaintiff, and in obtaining which the defendant surrendered and promised nothing. The plaintiff was in precisely the same position he was prior to its execution, excepting he had given up to the defendant all claim upon it which he otherwise might have by law, and he had received not one particle of consideration for such surrender of his legal rights." (28) The court further remarked that it did not mean to intimate that if the defendant had given some kind of a consideration for the paper it would have been valid. "It might even then be urged that public policy forbids the execution of such a contract from its employes by railroad and other corporations."

16. A case has arisen in Texas worthy of notice. A railroad company made a contract with one of its employes not to attempt to couple or uncouple a car unless he knew that the coupling was in a proper condition. "This," said the court, "imposes upon the servant a duty which the law imposes upon the master—to see that the implements furnished his servant are in a reasonably safe state of repair. This, it is believed, it not permissible." (29)

17. The only state, perhaps, sustaining the opposite principle, that an employer can relieve himself from liability for his own negligence to his employes, besides Pennsylvania, is Georgia. In the case of the Western & Atlantic R. v. Bishop (30), an employe agreed to take upon himself all risks connected with or incident to his position on the road, and that he would in no case hold the company liable for any damage he might sustain by accident or carelessness or misconduct of himself or other employe, or person connected with such road, or in the service of the company. It was decided that this contract, so far as it did not waive any criminal neglect of

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(27) 125 N. Y. 209.

(28) Potter v. Detroit R., 81 N. W. Rep. 80, s. c. 82 N. W. Rep. 245.

(29) Missouri, Kansas & Texas R. v. Wood, 35 S. W. Rep. 879.

(30) 50 Ga. 465.

the company, or of its principal officers, was a legal contract and binding upon the employe. The court, speaking through Justice McCay, remarked: "We do not say that employer and employe may make any contract, we simply insist that they stand on the same footing as other people. No man may make a contract contrary to law, or contrary to public policy or good morals, and this is just as true of merchants, lawyers and doctors, of buyers and sellers, and bailors and bailees, as of employers and employes. Will it for a moment be insisted that one who borrows a horse may not stipulate he shall only exercise the care cast by law upon one who hires a horse? May not a warehouseman stipulate that he will take extraordinary care when the law, in the observance of such a stipulation, would cast upon him only ordinary care? May he not even stipulate that all the risk shall be upon the bailor? Modus et consentio vincunt legem is the most elementary principle of law in regard to contracts. The form of agreement and the convention of parties overrule the law." (31)

The court founded their conclusion partly on a provision of the Georgia code which declares that "a person may waive or renounce what the law has established in his favor, when he does not thereby injure others, or affect the public interest." "So far as I know," remarks the court, "this ancient rule is applicable to all the private relations in which men may place themselves towards each other."

18. The Georgia view is strongly supported by English law. In 1880 the Employer's Liability Act was passed by Parliament, whereby a workman or his legal representatives "have the same right of compensation and remedies against the employer as if the workman had not been a workman of, nor in the service of the employer, nor engaged in his work." Shortly afterward, an employer sought to relieve himself from the liability imposed on him by this act by contract, and a county court held that this could not be done, that such a contract was against public policy. But the court of review decided differently. Speaking through Justice Field, the court said: "It is at least doubtful whether where a contract is said to be void, as against public policy, some public policy which affects all society is not meant. Here the interest of the employed only would be affected. It is said that the intention of the legislature to protect workmen against imprudent bargains will be frustrated if contracts like that one are allowed to stand. I should say that workmen as a rule were perfectly competent to make reasonable bargains for themselves. At all events I think the present one is quite consistent with public policy." (32)

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(31) For other Georgia cases, see Western Atlantic R. v. Strong, 52 Ga. 461; Galloway v. Western & Atlantic R., 57 Ga. 512; Cook v. Railway Co., 72 Ga. 48; Fulton Bag & Cotton Co. v. Wilson, 89 Ga. 318.

(32) Griffith v. Earl of Dudley, 102 Q. B. Div. 357, 363.

The reasoning of the English court seems very strong, and if the question be regarded as solely between employed and employer, it is difficult to resist the conclusion that the parties thereto ought to be permitted to exercise their freedom and make such a contract as they desire. But is this the entire question? Is there not another and larger side, whether any one should be permitted for public reasons from relieving himself by contract from the consequences of his negligence? Is not the public seriously affected by the exercise of such power? Would not the care, skill and morals of employer and employed degenerate were employers permitted to relieve themselves by contract of every thought of care in furnishing and using all kinds of material, machinery and appliances? Would not the direct and unquestioned tendency be the growth of neglect with the inevitable accompaniment of more accidents and a larger loss of life? That such a result would be very serious to society no one will question. In the case of Crew v. The Bradstreet Co. (33), Chief Justice Paxson remarked "that contracts against liability for negligence are not favored by the law. In some instances, such as common carriers, they are prohibited as against public policy. In all cases, such contracts should be construed strictly, with every intendment against the party seeking their protection." This is sound reasoning and should be decisive of the question.

19. An employe assumes by contract the risk attending his employment. The law declares he knows what he is doing. It is true he does not say a word concerning the risk, but the law says so for him. "The immunity of the master," remarks the Supreme Court of New Jersey, "rests upon the contract of hiring, and not upon the observance or presence of negligence in either party. The master says to the servant, 'You understand fully the nature of the employment and the danger attending it; will you enter it?' The servant says, 'I accept it,' and the law implies that he accepts it, with all the risk incident to it, without regard to the magnitude of the dangers." (34)

20. An employe must use ordinary care to avoid injuries to himself. He is under as great obligations to provide for his own safety from such dangers as are known to him, or discoverable by the exercise of ordinary care on his part, as his employer is to provide for his safety. (35) "This principle," says Justice Murphy, "should never be disregarded, and this is especially so in employments where the machinery is not complicated, or the tools and

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(33) 134 Pa. 161, 169.

(34) Foley v. Jersey City Electric Light Co., 54 N. J. Law 414.

(35) Wormell v. Railroad, 79 Me. 405.

implements used are continually in the hands of the employe, and no great care or skill is required to discover defects." (36)

21. In a case arising from an injury to a person working in a saw mill this principle was applied. It was declared that he was under no obligation when beginning his employment to go through the mill and make himself familiar with each piece of machinery and thus learn the danger he might incur by coming in contact with it. "It was sufficient for him when undertaking his duties to ascertain what he was expected to do, and the dangers directly connected therewith, and he had a right to assume that, in the performance of his particular duty, reasonable facilities therefor would be afforded him, without coming in contact with other unforeseen or unsuspected dangers." (37). Such is the general rule often repeated with slight variations as the particular case seemed to require. It is quite impossible to state this duty or requirement of employes in precise words, because their situation is so varying. That he must exercise ordinary care in executing his employment is a universal rule. The hazard of working in a mine is greater than that of working on a farm, or in a cotton factory. An employe therefore assumes the hazards of the ordinary perils attending his employment whatever they may be. Says Justice Sherwood: "Whatever hazards are concomitants of the employment, the employe assumes necessarily when engaging in the performance of the duties pertaining thereto." (38)

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(36) Latnode v. Harter, 20 Nev. 303, 312; Hughes v. Winona R., 27 Minn. 137; Pennsylvania Co. v. Lynch, 90 Ill. 333; Darracott v. Chesapeake & Ohio R., 83 Va. 288, 294; Clark v. Richmond & Danville R., 78 Va. 709; Sheeler v. Chesapeake & Ohio R., 81 Va. 188; Shanny v. Androscoggin Mills, 66 Me. 420; Muldowney v. Illinois Central R., 39 Iowa 615; Toledo R. v. Ashbury, 84 Ill. 429; Hathaway v. Michigan Central R., 51 Mich. 253; Lockwood v. Chicago R. 55. Wis. 50; Memphis & Charleston R. v. Thomas, 51 Miss. 637; Railroad v. Jones, 95 U. S. 439; Juttle v. Milwaukee R., 122 U. S. 189; Illick v. Railroad Co., 67 Mich. 637.

(37) Swoboda v. Ward, 40 Mich. 420, 423.

(38) Cases in which the courts have held that the employe must exercise ordinary care when doing his work, examine his appliances, etc.:

Mich.: Ragon v. Toledo R., 97 Mich. 265; Batterson v. Chicago & Grand Trunk R., 53 Mich. 125; Karrer v. Detroit R., 76 Mich. 400; Bresser v. Flint R., 56 Mich. 620.

Maine: Langlois v. Railroad, 84 Me. 161.

Wis.: Writt v. Girard Lumber Co., 91 Wis. 496.

Mo.: Alcorn v. Chicago & Alton R., 108 Mo. 81; Porter v. Hannibal & St. Joseph R., 71 Mo. 66; Devlin v. Wabash R., 87 Mo. 545; Thomas v. Mo. Pacific R., 109 Mo. 197.

Va.: Darracott v. Railway Co., 83 Va. 288; Norfolk & Western R. v. Emmert, 83 Va. 640.

Ind.: Diamond Plate Glass Co. v. DeKority, 143 Ind. 381; Rogers v. Leyden, 127 Ind. 50; Louisville R. v. Buck, 116 Ind. 566; Ohio & Miss. R. v. Pearcy, 128 Ind. 197; Lake Erie R. v. Utz, 133 Ind. 265; Day v. Cleveland R., 137 Ind. 206.

If an employe is engaged in a dangerous service, he is required to use very great precaution to avoid danger, and if he does not, and is injured, he has no right to recovery against his employer. (39) But the dangers, as everyone knows, vary from almost absolute immunity to the gravest. They are manifold in kind and degree. When, therefore, we have said that the care that must be used is measured by the danger, we can say no more. In a given case, the question arises. Did the injured person exercise all the care the law required? This is a fact to be answered by the jury, after receiving proper instruction by the court. (40)

To the foregoing we may add the words of a well-known legal writer, which have been adopted by a legal tribunal: "It is the duty of the employe to go about his work with his eyes open. He may not wait to be told but must act affirmatively. He must take ordinary care to learn the dangers which are likely to beset him

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Pa.: Scholl v. Cole, 107 Pa. 1; Philadelphia & Reading R. v. Huber, 128 Pa. 63.

Wash.: Jennings v. Tacoma R., 7 Wash. 275; Olsen v. McMurray Cedar Lumber Co., 9 Wash. 500.

Iowa: Muldowney v. Illinois Cent. R., 36 Iowa 462, s. c. 39 Iowa 615; Way v. Illinois Central R., 40 Iowa 341; Lumley v. Caswell, 47 Iowa 159.

S. Car.: Evans v. Chamberlain, 40 S. C. 104.

Ky.: Louisville & Nashville R. v. Foley, 94 Ky. 220.

Il.: Chicago & Alton R. v. Johnson, 116 Ill. 206; McCormick Harvesting Machine Co. v. Burandt, 136 Ill. 170, 177.

Texas: Houston & Texas Cent. R. Co. v. McNamara, 59 Tex. 255; Taylor R. v. Taylor, 79 Texas 104.

Ala.: Georgia Pacific R. v. Davis, 92 Ala. 300.

Del.: Giles v. Diamond State Iron Co., 8 At. 368.

Ohio: Mad River R. v. Barber, 5 Ohio St. 541.

Ga.: Stubbs v. Atlanta Cotton-Seed Oil Mills, 92 Ga. 495; Austin v. Appling, 88 Ga. 54; Georgia Railroad & Bkg. Co. v. Kenney, 58 Ga. 485.

N. Y.: Shields v. New York Central R., 133 N. Y. 557; Crown v. Orr, 140 N. Y. 450, 453.

Ark.: Fordyce v. Edwards, 60 Ark. 438; Little Rock, R. v. Leverett, 48 Ark. 333.

Tenn.: Cumberland Co. v. Loomis, 3 Pickle 504.

Fed.: Little Rock R. v. Moseley, 56 Fed. 1009.

(39) Lake Shore R. v. Roy, 5 Ill. App. 82.

(40) Hathaway v. Railroad Co., 51 Mich. 259; Batterson v. Railway Co., 53 Mich. 127; Illick v. Railroad Co., 67 Mich. 639; Morton v. Railroad Co., 81 Mich. 435; Lake Shore R. v. O'Connor, 115 Ill. 254; Chicago R. v. Avery, 8 Ill. App. 133; Walsh v. Railroad Co., 27 Minn. 367; Anderson v. Railroad Co., 39 Minn., 523; Stroble v. Chicago R., 70 Iowa 555; Stephenson v. Duncan, 73 Wis. 405; Wedgewood v. Railway Co., 41 Wis. 478; Smith v. Peninsular Car Works, 60 Mich. 506; Fort Wayne R. v. Gildersleeve, 33 Mich. 133; Melzer v. Peninsular Car Co., 76 Mich. 94; Fisher v. Railway Co., 77 Mich. 546; Clark v. Railroad, 28 Minn. 128; Platt v. Railroad, 84 Iowa 694; Gibson v. Railroad, 63 N. Y. 449; Rains v. Railroad, 71 Mo. 164; Davis v. Railroad, 21 S. Car. 93; Missouri Pacific R. v. Somers, 71 Texas 700; Brossman v. Lehigh Valley R., 113 Pa. 490; Lovejoy v. Railroad, 125 Mass. 79.

in the service. If the master provide written or printed instructions or warning, it is his duty to read them. He must not go blindly and hurriedly to his work where there is danger. He must inform himself. This is the law everywhere. The servant is held by his contract of hiring, to assume the risk of injury from the ordinary dangers of the employment; that is to say, from such dangers as are known to him, or discoverable by the exercise of ordinary care on his part. He has, therefore, no right of action, in general, against his master for an injury befalling him from such a cause. His right to recover will often depend upon his knowledge or ignorance of the danger. If he knew of it or was under a legal obligation to know of it, it was part of his contract, and he cannot in general recover." (41)

22. In determining whether an employe has failed to exercise due care in avoiding danger, it is always necessary to take into consideration the exigencies and circumstances under which he acted. "If the service which he undertook to perform was required by a superior, and was such as to demand his exclusive attention, and that he should act with rapidity and promptness, it would be unreasonable to require of him that care, thought and scrutiny which might be exacted when there is time for observation and deliberation. In emergencies, where such attention, rapidity and promptness are demanded, it could hardly be expected that he would always call to mind previous information or knowledge that, if at the moment remembered, would have caused him to avoid the danger from which his injuries resulted. Under such circumstances the question of his due care would depend to some extent upon the view the jury might take of the necessity for immediate action and the time he had for reflection or thought." (42)

23. This principle has been carried very far. Thus, when persons at work on a railroad have been injured from the lack of a flagman to give notice of the coming of trains, the courts have often declared that, unless the statute required the company to have one, they would not hold this to be one of its duties. An accident might be prevented if a flagman were employed, but if men engage in labor, knowing there is no flagman, they assume the risk. (43)

If an accident occurs and no flagman is present, the injury assumes this form,—what care should be exercised in view of having no flagman in running trains. Evidently a different course is required than would be had a flagman been employed. The jury, therefore, is not permitted to declare that a railroad company is negligent when the fact of the flagman's absence is proved, because the risk from the danger is assumed. The jury is confined to the sole inquiry, How did the company run its train? Did it do this in a negligent manner in view of the fact that no flagman was employed at the place of the injury? If the company did, then it is liable; if the company did not, then it is not liable whatever may have been the consequence to the employes.

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(41) Beach on Contributory Negligence, quoted by Sherwood, Ch. J., in Thomas v. Missouri Pacific R., 109 Mo. 199.

(42) Battle, J., St. Louis R. v. Higgins, 53 Ark. 458, 466.

(43) McGrath v. Railroad, 63 N. H. 522; Houghkirk v. Canal Co., 92 N. Y. 227; Philadelphia & Reading R. v. Killips, 88 Pa., 405, 412; Heddles v. Railroad, 74 Wis. 256.

24. Another application of the principle may be made to an injury happening from exposed machinery. If employers were required to box it, injuries might be prevented; but juries are not permitted to find that to employ it in an exposed manner is negligence if the employe knew, or ought to have known of the danger.

Thus, in Coombs v. New Bedford Cordage Co., Justice Hoar remarks that it cannot be doubted "that it is the legal right of every person to carry on a business which is dangerous, either in itself or in his manner of conducting it, if it is not unlawful, and interferes with no right of other persons." (44) In such a case if a person is injured, the jury cannot find that his employer is negligent in not protecting employes from danger by guarding it, though the evidence may show clearly enough that it would not have happened had it been guarded, for the reason that the danger, however great, if known, or might have been by ordinary observation, is assumed by an employe.

25. The law imposes another requirement on an employe. He must observe and inspect the condition of the appliances used by him not solely for his own protection, but to promote the interest of his employer. In a well reasoned case, the court remarked that a workman who had charge of, or used implements or appliances in the performance of his work, preserve them in a condition which would render them fit for the purposes to which they were devoted. If they are exposed to wear or destruction from use, he must have repairs made; or, if he can properly restore them for use, he must do this himself. If such repairs can not be done by him, he must report the fact to his employer or other person having charge of such work. (45)

26. When machinery is defective or dangerous, the law assumes that an employe will exercise the same care to find out its real condition as in other cases. But there is a difference in the duty of the master and servant in this regard which has been thus stated by Justice Thomas, of the Supreme Court of Missouri: "The master is bound to look for defects, while the servant is bound only to discover what the ordinary use of the appliances would make

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(44) 102 Mass. 572, 585.

(45) Stroble v. Chicago R., 70 Iowa 555, 558.

known to a man of ordinary prudence. The master is held to know the defect if by the exercise of ordinary care he might know it. The servant has a right to assume that the master has furnished him with safe machinery unless its condition is such that by the exercise of ordinary care he would have discovered its defects." (46)

In the case of a brakeman who sued his employer for an injury caused by a defective brake, the court remarked that the employe was charged with the duty of exercising his faculties, and with the knowledge of such defects as were observable with the reasonable exercise of them in connection with the performance of his accustomed duties. But he was not bound to search for defects, or to test the machine in advance of using it, for he had the right to use the same, relying on the master for the discharge of his duty in providing a safe appliance without stopping to investigate its sufficiency or soundness, unless the defect was so apparent as to convey to him its unsafe and dangerous condition on his approach without investigation. If the employe had actual knowledge of its unsafe condition, then it would be negligence to use it, and if he did so he would assume the extra hazard in so doing. (47)

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(46) Gutridge v. Missouri Pacific R., 105 Mo. 520, 526.

(47) Maine: Wormell v. Railway Co., 79 Me. 404.

Massachusetts: Ford v. Fitchburg R., 110 Mass. 240; Holden v. Fitchburg R., 129 Mass., 268; Ferren v. Railroad, 143 Mass. 197; Lawless v. Railroad, 136 Mass. 1.

Vermont: Davis v. Railroad, 55 Vt. 84.

New York: Kain v. Smith, 89 N. Y. 376; Fuller v. Jewett, 80 N. Y. 46; Flike v. Railroad, 53 N. Y. 549; King v. Railroad, 72 N. Y. 607; Cone v. Railroad, 81 N. Y. 207; Marsh v. Chickering, 101 N. Y. 400; Carlson v. Phoenix Bridge Co., 132 N. Y. 278; Ellis v. Railroad, 95 N. Y. 546.

Missouri: Poter v. Railroad, 60 Mo. 160; Long v. Railroad, 65 Mo. 225; Bridges v. Railroad, 6 Mo. App. 389.

Pennsylvania: Baker v. Railroad, 95 Pa. 211; Pittsburg & Chicago R. v. Sentmeyer, 92 Pa. 276; Lehigh & Wilkes-Barre Coal Co. v. Hayes, 128 Pa. 294.

Kansas: Kansas Pacific R. v. Little, 19 Kan. 267.

Georgia: Baker v. Railroad, 68 Ga. 699.

Ohio: Lake Shore R. v. Fitzpatrick, 31 Ohio St. 479; Mad River R. v. Barber, 5 Ohio St. 541.

Tennessee: Guthrie v. Railroad, 11 Lea 372.

Minnesota: Drymala v. Thompson, 26 Minn. 40.

Wisconsin: Stephenson v. Duncan, 73 Wis. 406; Naylor v. Railway Co., 53 Wis. 661; Brabbits v. Railway Co., 38 Wis. 289; Smith v. Railway Co., 42 Wis. 520; Dorsey v. Construction Co., 42 Wis. 583; Wedgewood v. Railway Co., 44 Wis. 44; Stetler v. Railway, 46 Wis. 497; Bessex v. Railway Co., 43 Wis. 477; Hulekan v. Railway Co., 58 Wis. 318; Heine v. Railroad, 58 Wis. 531.

Indiana: Lake Shore R. v. McCormick, 74 Ind. 440; Indiana Car Co. v. Packer, 100 Ind. 181; Cincinnati R. v. McMullen, 117 Ind. 439; Cincinnati R. v. Roeach, 126 Ind. 445.

New Jersey: Paulmier v. Railroad, 34 N. J. Law 151.

Michigan: Smith v. Peninsular Car Works, 60 Mich. 501; Lyttle v. Railroad, 84 Mich. 289.

27. There is another requirement the reasonableness of which no one can question. When work can be done in several ways and an employe voluntarily chooses the most perilous because it may be more convenient, he alone must suffer the consequences. Many an employe has failed to recover because he chose to violate this salutary rule. (48)

28. Though an employe assumes the risk from the negligence of his co-employe, this means only that he assumes it quo ad hoc employer, but not as against his co-employe. If, therefore, one by his negligence injures another, the defense will not prevail, in a suit against him, that both are employed by the same master. (49)

CHAPTER III.

DUTIES OF EMPLOYERS.

Section 1.

The General Rule—Ordinary Care.

1. Though an employe is held to be his own insurer of all ordinary risks, a rule of duty has long been prescribed for employers of great importance. This rule is that an employer must exercise due or ordinary care (1) in selecting servants; (2) in furnishing them with suitable materials, and appliances for their tasks; (3) in keeping the appliances in repair; (4) in providing safe places for working; (5) in furnishing adequate assistance to do the work desired; (6) and lastly in giving proper regulations or instructions to youthful or inexperienced workmen. Had this rule always been enforced the legal relations between employers and employed would be much better understood than they are to-day. Its destruction by slow degrees through judicial action is perhaps the most remarkable overthrow of a great principle in modern judicial history. To do this the courts have taken about fifty years, and the solemnity

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Illinois: Chicago & Northwestern R. v. Jackson, 55 Ill. 492; Toledo R. v. Ingraham, 77 Ill. 309; Chicago R. v. Avery, 109 Ill. 314; Richardson v. Cooper, 88 Ill. 270; Pennsylvania Co. v. Lynch, 90 Ill. 333.

Texas: Galveston R. v. Delahunty, 53 Texas 206.

Iowa: Greenleaf v. Railroad, 29 Iowa 14; Burns v. Railroad, 69 Iowa 452.

California: Trask v. California R., 63 Cal. 96.

Connecticut: Wilson v. Willimantic Linen Co., 50 Conn. 433.

United States: Wabash R. v. McDaniels, 107 U. S. 454.

(48) St. Louis Bolt & Iron Co. v. Brennan, 20 Ill. App. 455.

(49) Griffiths v. Wolfram, 22 Minn. 185; Steinhauser v. Spraul, 114 Mo. 5518; Hinds v. Overacker, 66 Md. 547; Osborne v. Morgan, 130 Mass. 102; Kenney v. Cane, 9 Tex. Civ. App. 150; Warax v. Cincinnati R., 72 Fed. 637.

and dignity with which they have labored at their task is as remarkable as their success. It is true that in many states legislatures have somewhat undone the work of courts, while the English Parliament has swept almost wholly away the elaborate system of rules established by the courts for narrowing the liabilities of employers.

2. We may begin by inquiring, what is meant by ordinary care? The term has thus been defined by the Supreme Court of Vermont: (50) "A man in any situation of business is always bound to conform to the rules and usages which prudent and careful men have established in the conduct of similar business under similar circumstances, and the rule by which he is to govern the use of his own, is that which is established by the concurrent use of careful and prudent men in that particular business." In briefer language, the Supreme Court of Ohio has defined the term "as such care as is most common and usual in the business." (51) To these remarks may be added those of the Supreme Court of Massachusetts. "What is ordinary care cannot determined abstractly. It has a relation to, and must be measured by the work or thing done and the instrumentalities used, and their capacity for evil as well as good. What would be ordinary care in one case would be gross negligence in another. We look to the work; its difficulties, dangers and responsibilities, and then say, 'What would and should a reasonable and prudent man do in such an exigency.' The word 'ordinary' has a peculiar sense, which would greatly relax the rigor of the rule. The law means by ordinary care, the care reasonable and prudent men are under like circumstances." (52)

3. The courts have tried to define more precisely the meaning of the care and diligence that must be exercisd by employers, but the inquiry is always disappointing; it always eludes a precise answer. The answer given by the United States Supreme Court may be added to those already given, because it is the answer of the highest judicial tribunal. The opinion was delivered in the case of railroad employe against its employer. "Ordinary care on the part of a railroad company implies, as between it and its employes, not simply that degree of diligence which is customary among those intrusted with the management of railroad property, but such as, having respect to the exigencies of the particular service, ought reasonably to be observed. It is such care as, in view of the consequences that may result from negligence on the part of the employes, is fairly commensurate with the perils and dangers likely to be encountered. Ordinary care implies the exercise of reason-

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(50) Vinton v. Schwab, 32 Vt. 612.

(51) Mad River R. v. Barber, 5 Ohio St. 541.

(52) Cayzer v. Taylor, 10 Gray, 280.

able diligence, and reasonable diligence implies, as between the employer and employe, such watchfulness, caution and foresight as, under all the circumstances of the particular service, a corporation controlled by careful, prudent officers ought to exercise." (53

4. In manufacturing, transporting, or keeping an exceptionally dangerous thing, powder or dynamite, for example, more care must be exercised than in refining, transporting or keeping sugar. This subject has been well considered by Justice Field of the Supreme Court of the United States in the case of an employe in an iron mine who was injured by an explosion of dynamite. "All occupations producing articles or works of necessity, utility or convenience may undoubtedly be carried on, and competent persons familiar with the business and having sufficient skill therein may properly be employed upon them, but in such cases where the occupation is attended with danger to life, body or limb, it is incumbent upon the promoters thereof and the employers of others thereon to take all reasonable and needed precaution to secure safety to the persons engagd in their prosecution, and for any negligence in this respect, from which injury follows to the person engaged, the promoters or the employers may be held responsible and mulcted to the extent of the injury inflicted." In the controversy before the court it was shown that the explosive nature of the materials from heat or collision was well known to the employers, and this was a continuing admonition to them to take every precaution to guard against such a consequence. "Occupations, however important," continued the court, "which cannot be conducted without necessary danger to life, body or limb should not be prosecuted at all without reasonable precautions against such dangers afforded by science. The necessary danger attending them should operate as a prohibition to their pursuit without such safeguards. Indeed, we think it may be laid down as a legal principle, that, in all occupations which are attended with great and unusual danger, there must be used all appliances readily attainable known to science for the prevention of accidents, and that the neglect to provide such readily attainable appliances will be regarded as proof of culpable negligence. If an occupation attended with danger can be prosecuted by proper precautions without fatal results, such precautions must be taken by the promoters of the pursuit or employers of laborers therein. Liabilities for injuries following a disregard of such precautions will otherwise be incurred and this fact should not be lost sight of. So, too, if persons engaged in dangerous occupations are not informed of the accompanying dangers by the promoters thereof, or by the employers or laborers thereon, and such laborers remain in ignorance of the dangers and suffer in consequence, the employers

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(53) Wabash R. v. McDaniels, 107 U. S. 454.

will also be chargeable for the injuries sustained. Both of these positions should be borne constantly in mind by those who engage laborers or agents in dangerous occupations, and by the laborers themselves, as reminders of the duty owing to them. These two conditions of liability of parties employing laborers in hazardous occupations are of the highest importance, and should be in all cases strictly enforced." (54)

If it is not easy to define clearly ordinary care, for the reason that the term eludes exact definition, a still greater difficulty arises in applying it. The cases to which it is applied may be divided into three classes: (1) those in which the courts have had no difficulty in deciding that employers exercised ordinary care, and (2) others in which their lack of such care was equally apparent. Between these is a third class, a middle ground, in which not the rule, but the facts have caused the difficulty. Many cases belong to this class, and in deciding them the courts have differed. We do not know that any fruitful purpose will be served in reviewing them, for doubtless courts will continue to differ in their conclusions concerning the facts, just as they have done ever since they have attempted to apply the rule. (55)

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(54) Mather v. Rillston, 156 U. S. 391, 398.

(55) Other cases defining ordinary care:

Illinois: Chicago R. v. Avery, 109 Ill. 314; Richardson v. Cooper, 88 Ill. 270; Pennsylvania Co. v. Lynch, 90 Ill. 33; Chicago & Alton R. v. Kerr, 148 Ill. 605; Lake Shore v. O'Connor, 115 Ill. 254; Kranz v. White, 8 Ill. App. 583; Camp Point Mfg. Co. v. Ballou, 71 Ill. 417; Indianapolis R. v. Fay, 91 Ill. 474.

California: Brymer v. Southern Pacific R., 90 Cal. 497.

Massachusetts: Lawless v. Railroad, 136 Mass. 1; Warden v. Railroad, 137 Mass. 204; Holly v. Boston Gaslight Co., 8 Gray 131; Shaw v. Railroad, 8 Gray 79; Cayzer v. Taylor, 10 Gray 280.

New York: Painter v. Railroad, 83 N. Y. 61; Devlim v. Smith, 89 N. Y. 470; Slater v. Jewett, 85 N. Y. 61; Marsh v. Chickering, 101 N. Y. 396; Carlson v. Phoenix Bridge Co., 132 N. Y. 273; Brand v. Schnectady R., 8 Barb. 368; Ernst v. Hudson River R., 35 N. Y. 9; Burke v. Witherbee, 98 N. Y. 562.

Iowa: Greenleaf v. Railroad, 29 Iowa 14; Cooper v. Railroad, 44 Iowa 134; Hunt v. Railroad, 26 Iowa 363; Willoughby v. Railroad, 37 Iowa 432.

Maine: Wormell v. Maine Central R., 79 Me. 397.

Minnesota: Gates v. Southern Minn. R., 28 Minn. 110; Hall v. Chicago R., 46 Minn. 439.

Maryland: Baltimore & Ohio R. v. Worthington, 21 Md. 368; Wise v. Ackerman, 76 Md. 375.

Vermont: Davis v. Hulet, 58 Vt. 90; Morrisey v. Hughes, 65 Vt. 553.

Rhode Island: Smith v. Old Colony R., 10 R. I. 22.

Pennsylvania: Titus v. Bradford R., 136 Pa. 618; Rooney v. Carson, 161 Pa. 26.

Michigan: Michigan Central R. v. Coleman, 28 Mich. 448.

Wisconsin: Read v. Morse, 34 Wis. 318; Atkinson v. Goodrich Transp. Co., 69 Wis. 6; Ward v. Railroad, 29 Wis. 148.

Georgia: Central Railroad & Bkg. Co. v. Ryles, 84 Ga. 420.

Section 2.

Selection of Competent Employes.

1. Passing from the general to the particular, we will proceed to consider more fully each of the six clauses or divisions of the great rule defining the duties and liabilities of employers. The first division relates to the employment of competent employes.

2. The rule guiding employers has been thus stated by the Supreme Court of Pennsylvania: "What employers owe to their servants and workmen," says Justice Sharswood, "is the exercise of reasonable care and proper diligence in providing them with safe machinery and suitable tools, and in employing with them fit and competent superintendents and fellow-workmen. Not that they warrant the result, nor that extraordinary vigilance is exacted of them. It is nevertheless true that what is due care and ordinary diligence will much depend on the kind of business which is carried on, and the sort of material which is handled. The proprietor of a powder mill must exert more precaution than the master of a blacksmith shop. So, in such an establishment as that of refining oil from crude petroleum, a material highly inflammable and explosive, we are bound to examine the question of negligence with regard to this circumstance." (56) In a well reasoned case against a railroad com-

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Kentucky: Louisville R. v. McCoy, 81 Ky. 403.

West Virginia: Berns v. Gaston Coal Co., 27 W. Va. 285.

Texas: Texas & Pacific R. v. Huffman, 83 Texas 286; Gulf R. v. Wells, 81 Texas 685; Gulf R. v. McNeill, 25 S. W. 647; Gulf R. v. Schwabbe, 1 Tex. Civ. App. 573; Gulf & W. Texas R. v. Abbott, 24 S. W. 299 (Civ. App.); Eddy v. Adams, 18 S. W. 490.

Kansas: Hanibal & St. Joseph R. v. Kanaley, 39 Kan. 1; Atchison R. v. Wagner, 33 Kan. 660; Kansas City & Pacific R. v. Ryan, 52 Kan. 637.

Arkansas: St. Louis R. v. Jagerman, 59 Ark. 98.

Alabama: Alabama & Florida R. v. Waller, 48 Ala. 459; Smoot v. Mobile & Miss. R., 67 Ala. 13; Louisville & Nashville R. v. Allen, 78 Ala. 494; Louisville & Nashville R. v. Davis, 91 Ala. 487.

United States: Kane v. Railway Co., 128 U. S. 95; Aerkfetz v. Humphreys, 145 U. S. 418; Grand Trunk R. v. Ives, U. S. 417; Chicago R. v. Carpenter, 5 C. C. App. 551.

(56) Connecticut: Hayden v. Smithville Mfg. Co., 29 Conn. 548.

California: Gier v. Los Angeles R., 108 Cal. 129; Beasley v. Fruit Packing Co., 92 Cal. 388; Taylor v. Railway, 45 Cal. 323; Cosgrove v. Pitman, 103 Cal. 268; Beeson v. Green Mt. Gold Mfg. Co., 57 Cal. 20; McGlynn v. Brodie, 31 Cal. 378.

Colorado: Kundell v. Hall, 44 Pacific Rep. 781; Acme Coal Mining Co. v. McIver, 5 Col. App. 267.

Georgia: Baker v. Western R., 68 Ga. 699; Bell v. Western R., 70 Ga. 566.

Iowa: Mayes v. Railroad, 63 Iowa 562; Couch v. Watson Coal Co., 46 Iowa 17; Haworth v. Seever Mfg. Co., 51 N. W. 68; Gorman v. Railroad, 78 Iowa 509; Kroy v. Railroad, 32 Iowa 357; Gorman v. Minneapolis, St. Louis R., 78 Iowa 509; Way v. Railway Co., 40 Iowa 341; Platt v. Railway Co., 84 Iowa 694;

Wells v. Railway Co., 56 Iowa 520; Kuhns v. Railway Co., 70 Iowa 561; Williams v. Railroad, 43 Iowa 396; Muldowney v. Railroad, 36 Iowa 462.

Illinois: Simmons v. Chicago & Tomah R. Co., 111 Ill. 340; Indianapolis R. v. Flanigan, 77 Ill. 365; Pennsylvania Co. v. Lynch, 90 Ill. 333; Honner v. Illinois Central R., 15 Ill. 550; Columbus R. v. Troesch, 68 Ill. 552; Chicago & Northwestern R. v. Moranda, 108 Ill. 576; U. S. Rolling Stock Co. v. Wilder, 116 Ill. 100; Chicago R. v. Troesch, 68 Ill. 545; Stafford v. Chicago, Burlington & Quincy R., 114 Ill. 244; Chicago & Eastern Ill. R. v. Geary, 110 Ill. 383; St. Louis Pressed Brick Co. v. Kenyon, 57 Ill. App. 640; Chicago & Alton R. v. Sullivan, 63 Ill. 293.

Indiana: Indiana, Burlington & Western R. v. Dailey, 110 Ind. 75; La Rose v. Bank, 102 Ind. 332; Ohio & Miss. R. v. Dunn, 138 Ind. 18; Louisville R. v. Breedlore, 10 Ind. App. 657; Chicago & Great Eastern R. v. Harney, 28 Ind. 28; Ohio & Miss. R. v. Collarn, 73 Ind. 261; Evansville & Terre Haute R. v. Guyton, 115 Ind. 450; Lake Shore & Mich. Southern R. v. Steepak, 123 Ind. 210; Pennsylvania Co. v. Roney, 89 Ind. 453; Pittsburg, Fort Wayne R. v. Ruby, 38 Ind. 294; Evansville & Terre Haute R. v. Tohill, 143 Ind. 49.

Kentucky: McDowell v. Railway Co., 5 S. W. 413.

Kansas: Chicago R. v. Doyle, 18 Kan. 58; Kansas Pacific R. v. Peavey, 34 Kan. 472; McQueen v. Railroad, 30 Kan. 689; Jackson v. Railroad, 31 Kan. 761.

Minnesota: Crandall v. McIlrath, 24 Minn. 127.

Massachusetts: Joyce v. City of Worcester, 140 Mass. 245; Pingree v. Leyland, 135 Mass. 398; Moulton v. Gage, 138 Mass. 390; Williams v. Churchill, 137 Mass. 243; Lovejoy v. Boston & Lowell R., 152 Mass. 79; Crowley v. Pacific Mills, 148 Mass. 228; Lovejoy v. Boston & Lowell R., 125 Mass. 82; Whitmore v. Railway Co., 150 Mass. 477; Morse v. Glendon Co., 125 Mass. 282; Gilman v. Railroad, 10 Allen 233 and 13 Allen 433; Keith v. Railroad, 140 Mass. 175; Hall v. Nay, 144 Mass. 186; Peaslee v. Railroad, 152 Mass. 158; Monahan v. City of Worcester, 150 Mass. 439; Makin v. Railroad, 135 Mass. 201; Curran v. Manufacturing Co., 130 Mass. 374; Collon v. Richards, 123 Mass. 484; Keith v. New Haven & Northampton Co., 140 Mass. 175; Peaslee v. Fitchburg R. Co., 152 Mass. 155; Hayes v. Western R. Corp., 3 Cush. 279; Snow v. Housatonic R. Co., 8 Allen 441; Rogers v. Ludlow Mfg. Co., 144 Mass. 198; O'Neil v. O'Leary, 164 Mass. 387; McPhee v. Scully, 163 Mass. 216.

Missouri: Moro v. Pacific Railroad, 49 Mo. 167; Harper v. Ind. & St. Louis R., 47 Mo. 567; Smillie v. St. Bernard Dollar Store, 47 Mo. App. 402; Huffman v. Railroad, 78 Mo. 50; Williams v. Missouri Pacific Railroad, 109 Mo. 475; Kersey v. Kansas City R. Co., 79 Mo. 362; McDermott v. Railroad, 30 Mo. 116; Elliot v. Railroad, 67 Mo. 272; Murphy v. St. Louis I. M. R., 71 Mo. 202; McDermott v. Hanibal & St. Joseph R., 87 Mo. 285; Roblin v. Kansas City R., 119 Mo. 476; Maxwell v. Hanibal & St. Joseph R., 85 Mo. 95; Alcorn v. Chicago & Alton R., 108 Mo. 81; Rains v. Railway Co., 71 Mo. 164; Jackson v. Railway Co., 104 Mo. 448; Cummings v. Collins, 61 Mo. 523; Huler v. Railroad, 67 Mo. 239.

Maryland: Baltimore Elevator Co. v. Neal, 65 Md. 438; Norfolk & Western R. v. Hoover, 79 Md. 253.

Michigan: Michigan Cent. R. v. Gilbert, 46 Mich. 176; Michigan Cent. R. v. Dolan, 32 Mich. 513; Hilts v. Railway Co., 55 Mich. 440; Kean v. Detroit Copper Mills, 66 Mich. 284; Tell v. Railroad, 87 Mich. 574; Davis v. Detroit & Mich. R., 20 Mich. 105; Timni v. Michigan Central R., 98 Mich. 226; Thompson v. Lake Shore & Mich. Southern, 84 Mich. 281.

Maine: Corson v. Maine Central Railroad, 76 Me. 244; Blake v. Maine Central R., 70 Me. 63; Lowler v. Androscoggin R., 62 Me. 467; McDermott v. Railroad, 73 Me. 516; Neilon v. Kansas City R., 85 Me. 599.

New York: Laning v. Railroad, 49 N. Y. 521; Flike v. Railroad, 53 N. Y. 549;

pany, for an injury caused by a conductor, the court remarked that in employing its subordinate it was the duty of the company "to exercise a degree of care commensurate with the responsibilities of the position in which they were placed, and with the consequences that might ensue from incompetence or unskilfulness on the part of those employed. In case peculiar fitness was required, or special qualifications demanded for the service to be performed, unless it was assured by the previous like service of the conductor or his fitness, the duty of the company required it to institute affirmative inquiries in order to ascertain his qualifications in this regard." (57)

Chapman v. Erie R., 55 N. Y., 579; Wright v. Railroad, 25 N. Y. 562; Coon v. Railroad, 6 Barb. 231; Baulec v. Railroad, 59 N. Y. 356; Coppins v. Railroad, 122 N. Y. 557; Haskln v. Railroad, 65 Barb. 129; Harvey v. Railroad, 88 N. Y. 481; Burke v. Railroad, 69 Hun. 21; Sutherland v. Railroad, 125 N. Y. 737; Mann v. Delaware & Hudson Canal Co., 91 N. Y. 495; Booth v. Boston & Albany Co., 73 N. Y. 38; Whittaker v. Delaware & Hudson Canal Co., 126 N. Y. 584; Cameron v. New York Central R., 145 N. Y. 496.

Rhode Island: Gaffney v. New York & N. E. R., 15 R. I. 456; Kelley v. Silver Spring Co., 12 R. I. 112; McGrath v. New York & N. E. R. Co., 14 R. I. 357.

North Dakota: Bennett v. Railway Co., 2 N. Dak. 112.

Texas: Texas & New Orleans R. v. Berry, 67 Texas 238; Houston & Texas Central R. v. Patton, 9 S. W. 175; Gulf R. v. Schwabbe, 1 Texas Civ. App. 573; Campbell v. Wing, 5 Texas App. 431.

Virginia: Norfolk & Western R. v. Nuckols, 21 S. E. 342; Norfolk & Western R. v. Jackson, 85 Va. 489; Norfolk & Western R. v. Cottrell, 82 Va. 512; Norfolk & Western R. v. McDonald, 88 Va. 352.

Tennessee: East Tenn. R. v. McKeney, 15 W. 500.

Arizona: Hobson v. Railway Co., 11 Pa. 545.

West Virginia: Core v. Ohio River Co., 38 W. Va. 456.

Utah: McCharles v. Horn Silver Mining Co., 10 Utah 470.

Wisconsin: Haley v. Western Transit Co., 76 Wis. 344; Disotell v. Henry Luther Co., 90 Wis. 635.

Vermont: Noyes v. Smith, 28 Vt. 63; Latremonille v. Railroad, 63 Vt. 336.

Ohio: Mad River & Lake Erie R. v. Barber, 5 Ohio St. 541; Lake Shore & Michigan Southern R. v. Knittal, 33 Ohio St. 468.

Pennsylvania: Snodgrass v. Carnegie Steel Co., 173 Pa. 228; Pennsylvania R. Co. v. Book, 57 Pa. 339; Rummell v. Dilworth, 111 Pa. 349; Huntingdon & Broad Top R. v. Decker, 82 Pa. 119 and 84 Pa. 419; Frazier v. Pennsylvania R., 38 Pa. 104; Reiser v. Pennsylvania Co., 152 Pa. 38; Johnston v. Pittsburg & W. R., 114 Pa., 443; Philadelphia & Reading R. v. Trainor, 137 Pa. 148; Lewis v. Seifert, 116 Pa. 628; Weger v. Railroad, 55 Pa., 460; Lebbering v. Struthers, Wells Co., 157 Pa., 312; Ardesco Oil Co. v. Gilson, 63 Pa. 146, 150.

United States: Northern Pacific R. v. Herbert, 116 U. S. 655; Wabash Railway v. McDaniels, 107 U. S. 454; Melville v. Railroad, 48 Fed. 820; Ross v. Chicago, etc., R., 8 Fed. 544; Baltimore & Ohio R. v. Henthorne, 73 Fed. 634; Baltimore & Ohio R. v. Camp, 65 Fed. 952; New York & Texas Steamship Co. v. Anderson, 50 Fed. 462; Wabash & Western R. v. Brow, 65 Fed. 941; Townsend v. Langles, 41 Fed. 919; Tutle v. Railway Co., 122 U. S. 195; Randall v. Baltimore & Ohio R., 109 U. S. 478; Brooks v. Railway Co., 47 Fed. 687.

(57) Indiana: Cincinnati R. v. Harney, 28 Ind. 28.

New York: Wright v. New York Central R. 25 N. Y. 562; Baulec v. New York & Harlem R., 59 N. Y. 356; Coppins v. New York Central R., 122 N. Y. 557; Laning v. Railroad, 49 N. Y. 521; Flike v. Boston & Albany R., 53 N. Y. 549.

In Gilman v. Eastern Railroad (58), the court declared that a master was bound to use ordinary care in providing proper servants to carry on his business, and was liable to any fellow-servants for his negligence in this respect. This care he could and must exercise in keeping and maintaining such servants and engines. If he knew, or in the exercise of due care might have known, that his servants were incompetent, either at the time of procuring them or at any subsequent time, he failed in his duty. In this case the railroad company employed a flagman who, it was contended, was an habitual drunkard. To employ such a man, especially for these positions, clearly was negligence. The fact that he was a man of this character was decided by the jury against the company, whose verdict was not disturbed by the court of review. "A railroad corporation," said the court, "is bound to provide proper road machinery and equipment and proper servants. It must do this through appropriate officers. If acting through appropriate officers, it knowingly or negligently employs incompetent servants, it is liable for an injury occasioned to a fellow-servant by this incompetency. If it continues in its employment an incompetent servant after his incompetency is known to its officers, or so manifest that its officers using due care, would have known, such continuance in employment is as much a breach of duty and a ground of liability as the original employment of an incompetent servant."

In applying this rule there is difficulty, for all have not the same mind concerning the facts relating to one's competency. In one of the cases against a railroad company, Justice Allen remarked that the duty of a railroad corporation was to exercise due, that is, ordinary care, in the selection and employment of its servants and

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Massachusetts: Snow v. Housatonic R., 8 Allen 441; Rogers v. Ludlow Mfg. Co., 144 Mass. 198; Cayzer v. Taylor, 10 Gray 274; Albro v. Agwam Canal Co., 6 Cush. 75, 77.

Illinois: Chicago R. v. Troesch, 68 Ill. 545.

Missouri: Moss v. Pacific R., 49 Mo. 167; McDermott v. Railroad, 30 Mo. 116; Elliot v. Railroad, 67 Mo. 272.

Pennsylvania: Philadelphia & Reading R. v. Trainor, 137 Pa. 148; Lewis v. Seifert, 116 Pa. 628; Weger v. Railroad, 55 Pa., 460; Lehigh Valley Coal Co. v. Jones, 86 Pa., 432, 439; Philadelphia & Reading R. v. Hughes, 119 Pa. 301; O'Donnell v. Allegheny R., 59 Pa. 239; Caldwell v. Brown, 53 Pa. 453, 456; Philadelphia, Wil. & Balt. R. v. Keenan, 103 Pa. 124; Green & Coates St. Pass. R. v. Bresmer, 97 Pa. 103; Patterson v. Pittsburg & Connellsvillle R., 76 Pa. 389; Penn. & N. Y. Canal & R. v. Mason, 109 Pa. 296; Schall v. Cole, 107 Pa. 1; Allison Mfg. Co. v. McCormick, 118 Pa. 519; Rumrill v. Dilworth, 111 Pa. 343; s. c. 131 Pa. 509; Keyes v. Pennsylvania R., 3 At. Rep. 15.

Virginia: Norfolk & Western R. v. Nuckols, 21 S. E. Rep. 342.

New Hampshire: Fifield v. Northern R., 42 N. H. 225.

California: Gier v. Los Angeles Co., 108 Cal. 129.

United States: Wabash R. v. McDaniels, 107 U. S. 454.

(58) 13 Allen 433, 440.

agents, having respect to their particular duties and responsibilities and the consequences that might result from the want of competence, skill or care in the performance of their duties. "If, without exercising such care and caution, employes and agents are selected who are incompetent, or in any respect unfitted for the position, and harm and loss comes to others by reason of such incompetency or unfitness, the corporation must answer for their neglect and want of care in employing a servant incompetent or untrustworthy." (58) In another case the Supreme Court of Missouri declared that it was the duty of the defendants' officers to employ proper servants, but the duty was not an absolute one. If they made careful inquiry into the habits and competency of the men employed, and upon such inquiry believed and had reason to believe them to be sober, competent and careful they could do no more. (59)

The remarks of the Supreme Court of Michigan are well worth adding: " While we only say as a general proposition that the degree of care required in all cases is that which men of ordinary care and prudence exercise, yet it is to the business itself that we must look when we desire to ascertain whether such care and prudence have or not been exercised in a given case. Ordinary care and prudence, or what might clearly be considered such, in a given case, might, if applied in like manner, where the hazard and responsibility was greater, fall far short, or be grossly negligent. A man might be fully qualified to act as yard-master at a small unimportant station who would be wholly unfitted to take charge of a large yard with many tracks and where a large number of trains were arriving and departing each day." (60)

3. The law presumes that an employer has selected competent employes. Having done so the master may rely on their competency until he has received notice of a change. If an employe is not competent, the burden of proof is on the party who makes the charge. (61) He must show that the employer knew, or would have known, had he exercised proper care and diligence, of the incompetency of the servant thus charged. (62)

4. Nevertheless, though an employe is competent, or fit for his employer's service when hired, and no presumption of unfitness afterward arises, yet the master cannot shut his eyes, close his

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(58) Gilman v. Eastern R., 13 Allen 433, 440.

(59) Moss v. Pacific R., 49 Mo. 167, 170.

(60) Michigan Central R. v. Gilbert, 46 Mich. 176, 179.

(61) Blake v. Maine Central Co., 70 Me. 64; Chapman v. Erie R., 55 N. Y. 79.

(62) Blake v. Maine Central R., 70 Me. 63; Lawler v. Railroad, 62 Me. 467; Harper v. Railroad, 47 Mo. 567; Moss v. Railroad, 49 Mo. 167.

ears and rest in peaceful security, unconcious and indifferent to what may thereafter take place. (63)

5. Finally, to charge effectively a master with negligence for employing incompetent servants, the person injured must show that his injury was caused by the incompetency of the person employed. Thus, a fireman was employed to operate an engine who was not qualified, for he was a machinist. Yet, the court declared "that if he handled the engine as carefully and prudently as an engineer of ordinary care and prudence would have done under the circumstances," then another employe could not recover of the employer, "even if the jury should believe that he was not well qualified for the work to be done." (64)

6. In attempting to prove that a servant is incompetent, the Supreme Court of Pennsylvania has declared that incompetency cannot be established by any of such acts, but must be by evidence of genuine reputation. As this rule has been repudiated by other courts, we will give Chief Justice Lowrie's reasons for the decision: "Character for care, skill and truth of witnesses, parties or others, must all alike be proved by evidence of general reputation, and not of special acts. Character grows out of special acts, but is not proved by them. Indeed, special acts do very often indicate frailties or vices that are altogether contrary to the character actually established. And sometimes the very frailties that may be proved against a man may have been regarded by him in so serious a light as to have produced great improvement of character. . Besides this, ordinary care implies occasional acts of carelessness, for all men are falliable in this respect, and the law demands only the ordinary." (65)

7. The New York Court of Appeals has reasoned very differently. In Baulec v. New York & Harlem R. (66), Justice Allen said: "When, as here, the general fitness and capacity of a servant is involved, the prior acts and conduct of such servant on specific occasions may be given in evidence with proof that the principal had knowledge of such acts. The cases in which evidence of other acts of misconduct or neglect of servants or employes whose acts and omissions of duty are the subject of investigation, have been held incompetent, have been those in which it has been sought to prove a culpable neglect of duty on a particular occasion, by showing similar acts of negligence on other occasions. This class of cases does not bear upon the case in hand, and may be laid out of view. Proof of specific acts of negligence of a servant or agent on one or more occasions does not tend to prove negligence on the par-

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(63) Michigan Central R. v. Gilbert, 46 Mich, 176, 179.

(64) Gulf R. v. Schwabbe, 1 Texas Civ. App. 573.

(65) Frazier v. Pennsylvania R., 38 Pa. 104.

(66) 59 N. Y. 356, 360.

ticular occasion, which is the subject of injury. (67) Where character as distinguished from reputation is the subject of investigation, specific acts tend to exhibit and bring to light the peculiar qualities of the man, and indicate his adaptation, or want of adaptation to any position, or fitness or unfitness for a particular duty or trust. It is by many, or by a series of acts that individuals acquire a general reputation, and by which their characters are known and described, and the actual qualities, the true characteristics of individuals, those qualities and characteristics which would and should influence and control in the selection of agents for positions of trust and responsibility, are learned and known. A principal would be without excuse should he employ for a responsible position, on the proper performance of the duties of which the lives of others might depend, one known to him as having the reputation of being an intemperate, imprudent, indolent or careless man. He would be held liable to the fellow-servants of the employe for any injury resulting from the deficiencies and defects imputed to the individual by public opinion and general report. Still more should he be chargeable if he had knowledge of specific acts showing that he possessed characteristics incompatible with the duties assigned to him and which might expose his fellow-servants and others to peril and harm. Frazier v. Pennsylvania R. (68), is adverse to these views. It is safe to say that this decision has not been received with approval by the profession."

In the case of Pittsburg R. v. Ruby (69), the Frazier case was severely criticised. The effect of the ruling in that case was declared to be that a railroad corporation could not be charged with notice of the incompetency of one of its employes, by proof of special instance of want of care, skill and capacity, although all the acts were well known to the directors, president and superintendent, and that the only mode in which such proof could be made was by proof of general character. "This case stands alone," says the court, "unsustained and unsupported, so far as we have been able to discover, by any elementary work or decision. Nor can the decision be sustained by reason or on principle. Under the operation of that rule, corporations would, in many instances, be relieved of responsibility for injuries received, resulting from the reckless conduct of such corporations in employing and retaining negligent, careless and unskilled persons to run and operate railroads." (70)

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(67) Evansville & Terre Haute R. v. Guyton, 115 Ind. 450; Baltimore Elevator Co. v. Neal, 65 Md. 438; Couch v. Watson Coal Co., 46 Iowa 17; Huffman v. Railroad, 78 Mo. 50.

(68) 38 Pa. 104.

(69) 39 Ind. 294, 317.

8. The Pennsylvania view, however, is supported in Massachusetts. In Hatt v. Hay (71), the plaintiff was injured through the negligence of the defendant's foreman. Though permitted to show that the foreman's reputation for competency was bad, he was not permitted to prove specific acts of carelessness on the part of the foreman while engaged on the same task, and before the accident happened. The court, speaking through Justice Devens, remarked that because a servant may have been guilty of negligence on certain specified occasions, it by no means follows that he was on the occasion in question, or that he might not ordinarily be a careful and skilful workman, and properly employed as such. "The investigation of other individual acts of alleged carelessness on the foreman's part would necessarily have a tendency to confuse the case by collateral inquiries, to protect it indefinitely if these inquiries were carefully made, and to mislead and distract a court or jury from the true issue." (72)

9. The rule established in Michigan seems based on the soundest wisdom. By the Supreme Court of that state it is held that while the negligence of a servant in a particular instance cannot well be shown by testimony of his competency or carelessness on other occasions, such testimony may be used to show that the master was chargeable with negligence in retaining the servant. In the case in which the principle was applied the court remarked that it was incumbent on the plaintiff to show that the defendant was guilty of negligence in first employing the incompetent servant, causing the controversy, because he was unfitted for his position, or in afterwards retaining him. "This he could do by showing specific acts of incompetency, and bringing them home to the knowledge of the company, or by showing them to be of that nature, character and frequency that the company, in the exercise of due care on its part, must have brought them to its notice." (73)

10. An employe is warranted in assuming that the master has employed competent servants until notice to the contrary is brought home to him. It was, indeed, contended on one occasion that an

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(70) Gier v. Los. Angeles Electric Co., 108 Cal. 134; Nofsinger v. Goldman, 122 Cal. 609; Couch v. Watson Coal Co., 46 Iowa 22; Doris v. Detroit R., 20 Mich. 124; Wabash Western R. v. Brow, 65 Fed. 941; Baltimore R. v. Camp, 65 Fed. 958; Grube v. Mo. Pacific R., 98 Mo. 330; O'Hare v. Chicago R., 95 Mo. 662; Baltimore Elevator Co. v. Neal, 65 Md. 452; Norfolk R. v. Hoover, 79 Md. 253.

(71) 144 Mass. 186.

(72) Kennedy v. Spring, 160 Mass. 203; Connors v. Morton, 160 Mass. 333; Driscoll v. Fall River, 163 Mass. 105; Olsen v. Andrews, 168 Mass. 265; Galveston R. v. Davis, 48 S. W. Rep. 570 (Texas).

(73) Michigan Central R. v. Gilbert, 46 Mich. 176, 179; Hilts v. Chicago & Grand Trunk R., 55 Mich. 444.

operative was bound to investigate and find out whether his employer had used reasonable care in selecting other employes in the same branch of service. The court declared that the law imposed no such duty on the employe. "One thus employed is warranted in assuming that the master has discharged his duty in this respect, and until notice to the contrary is brought home to the employe, he may safely act upon that hypothesis." (74)

11. The general policy of advancing men from lower to higher position is in harmony with the rule of requiring employes to observe ordinary care in selecting their employes. Thus, in one of the cases the counsel for a company asked that the jury might be instructed that it was wise for corporations to take men employed by them from inferior positions and put them in higher ones, "as they thus held out the highest inducement to those in their employ to become skilful and faithful in the performance of their duties." The court of review declared that this instruction was "unobjectionable," though the wisdom of a policy concerning the management of a business was a question of fact rather than of law. (75) Such a policy, however, has the approval of other courts, though not all. (76)

Section 3.

The Selection of Suitable Appliances.

1. The term "appliances of a business," so the court said on one occasion, includes premises, machinery of every kind, and also the persons who are employed to operate them. (77) The term, therefore in this connection has a broad significance. Thus, when it is the duty of a railroad to transport employes over its track to and from their place of work, the track is an appliance and must be suitable for the purpose (78), while a track in process of construction is not thus regarded. Says the Supreme Court of Texas: "Train men are not required to examine the track for defects, and are held to assume the only danger resulting from such as are actually known to them, and such as are so patent as to make it negligence on their part not to see them. They have the right to assume that

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(74) U. S. Rolling Stock Co. v. Wilder, 116 Ill. 100, 109.

(75) Evansville & Terre Haute R. v. Guyton, 115 Ind. 450, 457.

(76) Texas R. v. Berry, 67 Texas, 238; Haskin v. Railroad, 65 Barb. 129.

(77) Johnson v. Ashland Water Co., 71 Wis. 557.

(78) Brick v. Rochester R., 98 N. Y. 211, 215; Walling v. Construction Co., 41 Car. 388; Texas R. v. Vallie, 60 Texas 481; Snow v. Housatonic R., 8 Cush. 441; Fifield v. Northern R., 42 N. Hamp. 223.

the master has performed his duty in providing them with an ordinarily safe track." (79)

2. An employer must select suitable appliances for the service that is to be performed by his employes. The rule has been thus stated by Chief Justice Bigelow of the Supreme Court of Massachusetts: (80) "The employer or master impliedly contracts that he will use due care in engaging the services of those who are reasonably fit and competent for the performance of their respective duties in the common service, and will also take due precaution to adopt and use such machinery, apparatus, tools, appliances and means as are suitable and proper for the prosecution of the business in which his servants are engaged with a reasonable degree of safety to life and security against injury. Thus, an owner of a steamboat would be liable to an engineer or workman in his employment for an injury occasioned by the use of a boiler which was clearly defective and insufficient. So a manufacturer would be subjected to a like liability by the use of imperfect or badly constructed machinery. And in like manner the proprietors of a railroad would be responsible for accidents happening by tracks improperly laid, or switches which were not constructed to operate with regularly and precision.

"The distinction on which this rule of law is founded is an eminently wise and just one. It is this: A workman or servant, on entering upon any employment is supposed to know and to assume the risks naturally incident thereto; if he is to work in conjunction with others he must know that the careelssness or negligence of one of his fellow-servants may be productive of injury to himself; and, besides this, what is more material, as affecting his right to look to his employer for damage for such injuries, he knows or ought to know that no amount of care or diligence by his master or employer can by possibility prevent the want of due care and caution in his fellow-servants, although they have been reasonably fit for the service in which they are engaged.

"It is certainly most just and reasonable that consequences which the servant or workman must have foreseen on entering into an employment, and which due care on the part of the employer or master could in no way prevent, should not be visited on the latter. But it is otherwise where injuries to servants or workmen happen by reason of improper and defective machinery and appliances used in the prosecution of a work. The use of these they would not foresee. The legal implication is, that the employer will adopt suitable instruments and means with which to carry on his business.

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(79) Fort Worth R. v. Wilson, 3 Texas Civ. App. 583, 587; Railway v. Aylward, 79 Texas, 675; Railway v. Taylor, 79 Texas 104; Railway v. McNamara, 59 Texas 255.

(80) Snow v. Housatonic R., 8 Allen 445.

These he can provide and maintain by the use of suitable care and oversight; and if he fails to do so he is guilty of a breach of duty under his contract, for the consequences of which he ought in justice and sound reason to be responsible."

3. In providing suitable appliances, etc., it is not always needful to provide the newest, or those that will protect employes the most completely from accident. The courts are in harmony in their statement of this principle. (81) Says the Supreme Court of Pennsylvania: "Some employments are essentially hazardous, and it by

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(81) Colorado: Burlington R. Co. v. Liehe, 17 Colo. 280.

Connecticut: Wilson v. Willimantic Linen Co., 50 Conn. 433.

Georgia: Georgia Railroad & Banking Co. v. Nelms, 83 Ga. 70.

Indiana: Columbus R. v. Arnold, 31 Ind. 174; Lake Shore R. v. McCormick, 74 Ind. 440; Indiana Car Co. v. Parker, 100 Ind. 181; Pennsylvania Co. v. Whitcomb, 111 Ind. 212; Cincinnati R. v. McMullen, 117 Ind. 439; Cincinnati R. v. Roesch, 126 Ind. 445.

Illinois: Indianapolis R. v. Foy, 81 Ill. 474; Chicago R. v. Avery, 109 Ill. 314; Kranz v. White, 8 Ill. App. 583; Richardson v. Cooper, 88 Ill. 270; Pennsylvania Co. v. Lynch, 90 Ill. 333; Camp Point Mfg. Co. v. Ballore, 71 Ill. 417; Norway v. Jensen, 52 Ill. 373; Wabash R. v. Moran, 13 Ill. 72.

Iowa: Greenleaf v. Railroad, 29 Iowa 14; Burns v. Railroad, 69 Iowa 450; Hathaway v. Illinois Central R., 60 N. W. 651.

Alabama: Georgia Pacific R. v. Brooks, 84 Ala. 138.

California: Martin v. California Central R., 94 Cal. 326.

Kansas: Atchison R. v. Lannigan, 42 Pac. 343; Chicago v. Blevins, 46 Kan. 370.

Massachusetts: Donahue v. Brown, 154 Mass. 21; Mooney v. Conn. River Lumber Co., 154 Mass. 407; Toy v. U. S. Cartridge Co., 159 Mass. 313; Robinson v. Blake Mfg. Co. 143 Mass. 528; Elmer v. Locke, 135 Mass. 575; Lawless v. Railroad, 136 Mass. 1; Gilman v. Eastern R., 10 Allen 233; Snow v. Housatonic R., 8 Allen 441.

Minnesota: Eicheler v. Hauggi, 40 Minn. 263; Eicheler v. St. Paul Furniture Co., 40 Minn. 263.

Maryland: Wonder v. Baltimore & Ohio R., 32 Md. 418; Baltimore & Ohio R. v. Stricker, 51 Md. 47.

Missouri: Johnson v. Missouri Pacific R. Co., 96 Mo. 340; Steinhauser v. Spraul, 114 Mo. 551.

Maine: Wormell v. Railroad, 79 Me. 404.

New York: Gordon v. Reynolds Card Mfg. Co., 47 Hun 278; Jacobson v. Cornelius, 42 Hun. 377.

Ohio: Mad River R. v. Barber, 5 Ohio St. 541; Pittsburg R. v. Henly, 48 Ohio St. 608.

Pennsylvania: McCombs v. Railroad, 130 Pa. 182; Payne v. Reese, 100 Pa. 301; Pittsburg & Chicago R. v. Sentmeyer, 92 Pa. 276; Lehigh Coal Co. v. Hayes, 128 Pa. 294.

South Carolina: Gunter v. Graniterville Mfg. Co., 18 S. Car. 262.

Texas: Martin v. Wrought Iron Range Co., 23 S. W. 387.

Wisconsin: Corcoran v. Mil. Gas Light Co., 81 Wis. 191; Thompson v. Herman, 47 Wis. 602.

Washington Territory: Columbia Co. v. Hawthorne, 3 Wash. T. 353.

United States: Washington R. v. McDade, 135 U. S. 554; Hough v. Railroad, 100 U. S. 213; Naylor v. New York Central R., 33 Fed. 801.

no means follows that an employer is liable because a particular accident might have been prevented by some special device or precaution not in common use. All the cases agree that the master is not bound to use the newest and best appliances. He performs his duty when he furnishes those of ordinary character and reasonable safety, and the former is the test of the latter; for, in regard to the style of the implement, or nature of the mode of performance of any work, 'reasonably safe' means safe according to the usages, habits and ordinary risks of the business. Absolute safety is unattainable, and employers are not insurers. They are liable for the consequences, not of danger, but of negligence; and the test of negligence in methods, machinery and appliances is the ordinary usage of the business. No man is held to a higher degree of skill than the fair average of his trade or profession, and the standard of due care is the conduct of the average prudent man. The test of negligence as to employers is the same; and however strongly they may be convinced that there is a better or less dangerous way, no jury can be permitted to say that the usual and ordinary way, commonly adopted by those in the same business, is a negligent way, for which liability shall be imposed." (82)

Justice Danforth, in speaking for the New York Court of Appeals, has said: "A master is not bound to furnish the best of known or conceivable appliances; he is required to furnish such as are reasonably safe (83), and to see that there is no defect in those which his employe must use. (84) The test is not whether the master omitted to do something he could have done, but whether, in selecting tools and machinery for their use, he was reasonably prudent and careful; not whether better machinery might not have been obtained, but whether that provided was in fact adequate and proper for the use to which it was to be applied." (85)

The statement of the rule by Justice Ellsworth in one of the earlier cases has been often quoted, that a mill owner is not required to furnish his mill "with the most approved machinery, or machinery which would be operated with less hazard, for every man may judge how he will carry on his own business, and workmen having knowledge of the circumstances must exercise their judgment whether they will enter or continue in his service; but as we regard the law, there must be a culpable neglect; an omission of duty towards an employe conversant with the machinery in use, and the hazards attending the prosecution of the business." (86)

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(82) Titus v. Bradford R., 136 Pa. 618.

(83) Burke v. Witherbee, 98 N. Y. 562; Probst v. Delamater, 100 N. Y. 266.

(84) Gottlieb v. Railroad, 100 N. Y. 462.

(85) Stringham v. Hilton, 111 N. Y. 188, 195; Develin v. Smith, 89 N. Y. 470; Sweeney v. Envelope Co., 101 N. Y. 520; Bajus v. Syracuse R., 103 N. Y. 312; Hickey v. Taafe, 105 N. Y. 26; Buckley v. Railroad, 113 N. Y. 540; Dobbins v. Brown, 119 N. Y. 188; Cosulich v. Standard Oil Co., 122 N. Y. 118; Kern v. De Castro Co., 125 N. Y. 50; Carlson v. Phoenix Bridge Co., 132 N. Y. 273; Harley v. Buffalo Car Mfg. Co., 142 N. Y. 31.

In the case of the Lake Shore R. v. McCormick (87), the court said: "The master's obligation is not to supply the servant with absolutely safe machinery, but his obligation is to use ordinary and reasonable care, not to subject the servant to extraordinary and unreasonable danger. When a master employs a servant to do a particular kind of work with a particular kind of implements and machinery, the master does not agree that the implements and machinery are free from danger in their use, but he agrees that such implements and machinery to be used by such servant are sound and fit for the purpose intended, so far as ordinary care and prudence can discover, and that he will use ordinary care and prudence in keeping them in such condition and fitness; and the servant agrees that he will use such implements and machinery with care and prudence; and if, under such conditions and circumstances, harm or injury come to the servant, it must be ranked among the accidents the risk of which the servant must be deemed to have assumed when he entered into such service.

"Neither companies nor individuals are bound, as between themselves and their servants, to discard and throw away their implements or machinery upon the discovery of any new invention which may be thought or claimed to be better than those they have in use; but if they take ordinary care and exercise ordinary prudence to keep their implements or machinery in sound repair, so that harm does not result to the servant for want of such sound condition of the implements or machinery used, then such individuals or companies will not be responsible to servants for any injury which may occur to them in the use of such implement or machinery."

President Lewis, of the Supreme Court of Virginia, expresses the rule thus concerning a railroad company: "It is not required to change its machinery in order to apply every new invention or supposed improvement in appliance, and it may even have in use a machine or appliance for its operation, shown to be less safe than another in use, without being liable to its employes for the non-adoption of the improvement, provided that the employe be not deceived as to the degree of danger that he incurs." (88)

In considering the test required of a mine owner, a recent court says: "An employer is bound to furnish machinery and appliances that are of ordinary character and reasonable safety. And the former is the conclusive test of the latter. Whatever is according to the general usual and ordinary course adopted by those in the same business is reasonably safe within the meaning of the law. The test is general use." (89) Whether the drift in the defendant's mine was timbered up in the usual and ordinary way was a question for the jury, (90)

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(86) Hayden v. Smithville Mfg. Co., 29 Conn. 548, 557.

(87) 74 Ind. 447.

(88) Darracott v. Chesapeake & Ohio R., 83 Va., 294, citing Hough v. Railroad, 100 U. S. 100; Lovejoy v. Boston & Albany R., 25 Mass., 79; Michigan Central R. v. Smithson, 45 Mich. 212.

Again, "when an appliance not obviously dangerous has been in daily use for a long time and has uniformly proved adequate, safe and convenient, its use may be continued without the imputation of imprudence or carelessness." (91)

The qualification in the rule should be noticed: "not obviously dangerous." An appliance may be obviously dangerous and yet be used daily for a long time. When in this condition the above rule can not be invoked by the employer. It was, however, in a case in California, with respect to a defective hook that had been suspended for a long time without accident. The court remarked that "that circumstance was only a matter of wonderment, and was an instance of how good luck will sometimes protect carelessness for long periods." (92)

The rule everywhere prevails that an employer need not adopt the newest or safest appliances, and the test is common use. On the other hand, it is said that an employer cannot disregard all the inventions for securing the safety and comfort of his men. As new inventions appear they come into use, employers that are the most progressive, and that often have the largest means, adopt them and others follow, and by and by their use becomes general. It must be, therefore, in the introduction of any new machine or appliance or safety device there is a time when its use and non-use may be perhaps equal—many use it, and many do not. What rule shall be applied to these cases? Shall it be said that if an appliance is use quite generally, that will suffice? Evidently there is a dividing line which cannot be covered by any rule. (93)

To this rule may be added another which may be stated in the words of Justice Earl. "It must always be true that where several appliances are in use, each of which is regarded by men of skill and experience as safe and proper, the master cannot be made liable for an injury to one of his servants, if in selecting the particular appliance he takes what, according to his judgment, is the best or most suitable, guided by his experience and observation, and those of the skilled men in his employment." (94)

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(89) Mason v. Fourteen Mining Co., 82 Mo. App. 367, 370, the court citing Ship Building Works v. Nuttall, 119 Pa. 149; Northern Central R. v. Husson, 101 Pa. 1; Kohler v. Schwenk, 144 Pa. 348; Titus v. Bradford R., 136 Pa. 618; Reese v. Hershey, 163 Pa. 263; Jones v. Lumber Co., 58 Ark. 125; Railway v. Allen, 78 Ala. 494; Railway v. Huntley, 38 Mich. 537.

(90) Mason v. Fourteen Mining Co., 82 Mo. App. 367; Huhn v. Railway, 92 Mo. 448; O'Millia v. Railway, 115 Mo. 205.

(91) Danforth, J., Stringham v. Hilton, 111 N. Y. 188.

(92) Monaghan v. Pacific Rolling Mill Co., 81 Cal. 190; Columbia R. v. Hawthorne, 3 Wash. T. 353.

(93) See Huhn v. Mo. Pacific R., 92 Mo. 440; Richmond & Danville R. v. Jones, 92 Ala. 218; Georgia Pacific R. v. Propst, 83 Ala. 518; Railroad v. Allen, 78 Ala. 494.

4. The employer's duty to furnish reasonably safe instrumentalities for the use of his employes does not require him to attend to, or secure the proper regulation of those parts which necessarily have to be adjusted in the course of their use. Thus, if a saw is provided with a movable gauge, it is not the duty of the employer to attend to the proper setting of this gauge for the use of the servant who is to operate the same. Of course, we are assuming that the operator is an adult and possessing requisite knowledge to use a saw of this nature. (95)

The rule that governs employed and employer in such cases is this: If the change in a machine is merely an ordinary adaptation of it to the purpose for which it was made, then the operator is required to make it, and assume the risk growing out of the change; on the other hand, if the change is one that is unknown in the ordinary use of the machine, and is made to adapt it temporarily to a special and unusual purpose, then it is the duty of the employer to notify the employe of the change, so that he may be prepared for it. Justice Hammersley has stated the rule in a recent case relating to a machine for making paper: "If the change in the machine in question was merely an adaptation of the machine to the purpose for which it was made, which a skilled operator must be presumed to anticipate—such, for instance, as the slight change necessary to keep the felt bands at proper tension—the risk of injury was one assumed by the plaintiff in accepting his employment. On the other hand, if the change was one unknown in the ordinary use of the machine, made to adapt it temporarly to a special and unusual purpose, calling for a difference in operation, and greatly increasing the danger. then it was the duty of the defendant to notify the plaintiff before requiring him to operate the machine in its altered condition." (96)

5. If a servant undertake to use machinery or appliances for other purposes than those intended, and for which the employer had no reason to suppose they would be used, and he is injured thereby, it is his own folly for which there is no redress. This has been especially applied to the use of elevators in mills, which are de-

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(94) Harley v. Buffalo Car Mfg. Co., 142 N. Y. 31, 36.

(95) Eicheler v. Hauggi, 40 Minn. 263.

(96) Ryan v. Chelsea Paper Mfg. Co., 69 Conn. 454; O'Keefe v. Paper Co., 66 Conn. 38, 45.

signed for carrying goods, etc., and not passengers, but in which employes persist in riding. (97)

6. As a part of an employer's duty to select suitable appliances and machinery and assign or prepare safe places for work for his employes, it is his duty in many cases to guard or protect such appliances, machinery or places from danger. The same rule must logically apply in performing this duty as in the work of selection or preparation in the beginning. In other words, it is a part of the same duty, and, therefore, the same degree of care, considering all the circumstances, must be exercised in doing the one thing as in doing the other. Chief Justice Ruger has well expressed the rule: "Those dangers which are known and can be mitigated or avoided by the exercise of reasonable care and precaution on the part of those carrying on the business, and injuries from which happen through neglect to exercise such care, are not incident to the business, and the master is generally liable for damages occurring therefrom." And in the same case the court further remarked that "when directing the performance of work by the servant in a place which may become dangerous, and such danger may be foreseen and guarded against by the exercise of reasonable care and prudence on the part of the master, it is his duty to exercise such care and adopt such precautions as will protect the servant from avoidable danger. This is the master's duty, and however he may choose to exercise it, whether through the supervision of a superintendent or some lower grade of employment, it still continues his duty, and not until he shows that it has been properly performed, can he claim exemption from liability for injuries occasioned by the non-performance." (98)

Nevertheless, in many cases, machinery is not covered, and it is said in the way of defence that the employer has the right to conduct his business as he pleases so long as he does not violate any positive law. It must, however, be understood that while he may do so, yet if he uses machinery that is dangerous without it, or exposes his employes to any danger that is unusual without telling them of it, unless the danger is obvious, or ought to be known by them, he is liable for the consequences.

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(97) Felch v. Allen, 98 Mass. 572; Duffy v. Upton, 113 Mass. 544; Curran v. Merchants' Mfg. Co., 130 Mass. 374; Colyer v. Pennsylvania R., 49 N. J. Law 59; Illinois Central R. v. Daniels, 19 So. Rep. 830 (Miss.); Hart v. Naumburg, 123 N. Y. 641; Stringham v. Hilton, 111 N. Y. 188; Hussey v. Coger, 112 N. Y. 614; Stetler v. Chicago & Northwestern R., 46 Wis. 497; Preston v. Chicago & Northern R., 98 Mich. 128; Stather v. Ness, 42 Minn. 379; Hamilton v. Richmond & Danville R., 83 Ga. 346; Durgin v. Munson, 9 Allen 396.

(98) McGovern v. Central Vt. R., 123 N. Y. 280; Laning v. New York Central R., 49 N. Y. 521; Corcoran v. Holbrook, 59 N. Y. 517.

Section 4.

The Employer's Duty to Make Repairs.

1. If it be an employer's duty to furnish suitable appliances, machinery, etc., for the use of his men in the beginning, the duty clearly would seem to be a continuing one so long as they are in use; and this is the view maintained by most, but not all, of the courts. The principle had been clearly stated by the Supreme Court of Maine. "The same care requisite in hiring a servant in the first instance must still be exercised in continuing him in the service; otherwise the employer will become responsible for his want of care or skill. The employer will be equally liable for the acts of an incompetent or careless servant whom he continued in his employment after a knowledge of such incompetency or carelessness, as when in the exercise of due care he should have known it, as if he had been wanting the same care in hiring. The same may very properly be said of machinery." (99)

"It is well settled by all the authorities," says Justice Morse, "that the master must provide his servant with a safe place to work in, and furnish him with suitable machinery and appliances with which to perform such work, and it is his duty to keep such machinery and appliances in good repair. If he cannot do this himself personally, he must provide some other person to take his place in this respect; and the person to whom the master's duty is thus delegated—no matter what his rank or grade; no matter by what name he may be designated—cannot be a servant in the sense or under the rule applicable to injuries occasioned by fellow-servants. Such person is an agent, and the rules of law applicable to principal and agent must apply.

"If the master can delegate this duty to an employe, and apply the doctrine of fellow-servant to such an employe because he is working in and about the same business, and in the same general line of such business, as in this case, the manufacture and piling of lumber, then the employer is permitted to shirk his duty upon another, and then allowed to escape all responsibility and liability upon the plea that the person injured is the fellow-servant of his delegate or agent. The law, as I understand it, will not permit this. It is a duty the master owes which he cannot delegate to a fellow-servant of his employes. If he picks out one of the men working about his mill, and imposes upon him the duty of seeing that the machinery is kept in safe repair, or delegates to one of the men working in the mill yard the duty of seeing that their docks are kept safe and sound, these men, as far as these duties are concerned, stand in the place of their employer, and their negligence." (100)

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(99) Shanny v. Androscoggin Mills, 66 Me. 420, 425; Lewis v. St. Louis R., 59 Mo. 495; Hough v. Railway Co., 100 U. S. 213, 217.

In like manner the Supreme Court of Indiana has remarked: "An employer is required not only to furnish reasonably safe and suitable tools and machinery, but to exercise such a continuing supervision over them by such reasonably careful and skilful inspection which employes are required to use in such a connection as not unnecessarily to expose them to unknown and extraordinary ills." (101)

Indeed, with the exception of perhaps Massachusetts, an employer's duty to keep his appliances and machinery in reasonable repair is just as imperative as the duty to furnish suitable appliances and machinery in the beginning. In other words, the duty to furnish suitable means to one's employes for doing their work is a continuing one. How extensively this rule prevails will be seen by examining the cases cited in the note. (1)

2. If appliances or machinery become impaired, and the user of

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(100) Van Duren v. Betellier, 78 Mich. 492, 502, the court citing Rodman v. Railroad, 55 Mich. 57, s. c. 59 Mich. 395; Slater v. Chapman, 67 Mich. 523; Baldwin v. Railroad, 75 Iowa 297; Capper v. Railroad, 103 Ind. 305; Northern Pacific R. v. Herbert, 116 U. S. 642; Railroad v. Jones, 30 Kan. 601; Luke v. Mining Co., 71 Mich. 364.

(101) Ohio & Miss. R. v. Peavey, 128 Ind. 197, 203.

(1) Arkansas: St. Louis R. v. Harper, 44 Ark. 524.

California: Beeson v. Green Mt. Mining Co., 57 Cal. 20.

Indiana: Indiana Car Co. v. Parker, 100 Ind. 181; Ohio & Miss. R. v. Peavey, 128 Ind. 197; City of Indianapolis v. Scott, 72 Ind. 196; Board of Commissioners v. Bacon, 96 Ind. 31.

Iowa: Braun v. Chicago & Burlington R., 53 Iowa 595; Thalman v. Moeller, 73 Iowa 108.

Kansas: Atchison R. v. Moore, 29 Kan. 632.

Illinois: Chicago & Northwestern R. v. Jackson, 55 Ill. 492.

Minnesota: Fay v. Minneapolis & St. Louis R., 30 Minn. 231.

Michigan: Roux v. Blodgett & Davis Lumber Co., 94 Mich. 607; Vandeusen v. Letellier, 78 Mich. 492.

New Jersey: Cole v. Warren Mfg. Co., 44 At. Rep. 647; Hustis v. Banister Co., 6 Am. Neg. Cases 318; Stone Co. v. Mooney, 61 N. J. Law 253; Curley v. Hoff, 42 At. Rep. 731; Steamship Co. v. Ingebregsten, 57 N. J. 400.

New York: Cregan v. Marston, 126 N. Y. 568; Fuller v. Jewett, 80 N. Y. 46; Corcoran v. Holbrook, 59 N. Y. 517.

Missouri: Lewis v. St. Louis R., 59 Mo. 495.

Pennsylvania: Ralpho v. Moore, 68 Pa. 404; Baker v. Allegheny Valley R., 95 Pa. 211.

Rhode Island: Mulvey v. R. I. Locomotive Works, 14 R. I. 204.

Texas: Houston & Texas R. v. Dunham, 49 Texas 181; Houston & Texas Central R. v. Marcellus, 59 Texas 334.

Virginia: Moon v. Richmond & A. R., 78 Va. 745; Torian v. Richmond & Allegheny R., 84 Va. 192.

West Virginia: Cooper v. Pittsburg & St. Louis R., 24 W. Va. 37.

South Carolina: Gunter v. Graniteville Mfg. Co., 18 S. Car. 262.

Wisconsin: Sherman v. Menominee Lumber Co., 72 Wis. 122; Bessex v. Railway Co., 45 Wis. 482; Brabbits v. Chicago & Northwestern R., 38 Wis. 289;

them continues at his employment without complaint, he stands in the same position as one who knowingly undertakes his employment in the beginning, and assumes the increased risk. (2) On the other hand, with respect to employes who know nothing of the greater danger, the employer is liable to them in the same degree as he would be if he equipped his mill or other plant with unfit appliances in the beginning. (3)

3. This principle does not apply to defects arising in the daily use of appliances, which do not require the aid of skilful mechanics to repairs. These, workmen usually repair themselves, and the law casts no liability on the employer for them. (4) Furthermore, when a master has a machinist, to whom his servants are required to report when repairs become needful, one of them cannot recover for an injury caused by making repairs himself. (5)

When an employer provides his servants with safe tools and machinery, he does not promise or engage that they will always remain in the same condition, and any defect which appears from their use the servant should report to his employer.

Again, an employer is not in fault if a tool or machine breaks, whether from an internal original fault not apparent when the tool or machine was at first provided, or for an external apparent one produced by time and use, which is not made known to the employer.(6)

A different rule, though, applies to perishable appliances. The employer knows that they will last only a limited time, and it is his duty to renew them at proper intervals. This principle applies especially to the use of ropes and similar things which are constantly wearing out from using them. (7)

4. An employer's duty to make inspections will next be considered.

Schultz v. Chicago & St. Paul R., 48 Wis. 375; Wedgewood v. Chicago & Northwestern R., 44 Wis. 44.

Fed.: Lund v. Hersey Lumber Co., 41 Fed. 202; Baltimore & Ohio R. v. Baugh, 149 U. S. 368; Hough v. Railway Co., 100 U. S. 213 .

(2) Davidson v. Cornell, 132 N. Y. 234.

(3) Id.

(4) Daley v. Boston & Albany R., 147 Mass. 101; Miller v. Grand Trunk R., 90 Mich. 230; Texas & Pacific R. v. Patton, 61 Fed. 259; Gotlieb v. Railroad, 101 N. Y. 462; Benzing v. Steinway, 101 N. Y. 547; Cone v. Railroad, 81 N. Y. 208; Murray v. Usher, 117 N. Y. 543; Fuller v. Jewett, 80 N. Y. 46; Cregan v. Marston, 126 N. Y. 568 (see Corcoran v. Holbrook, 59 N. Y. 568); Brick v. Railroad, 98 N. Y. 211; Carlson v. Railroad, 21 Or. 450; Murphy v. Railroad, 88 N. Y. 146; Bryant v. Railroad, 66 Iowa 305; Howland v. Railroad, 54 Wis. 226.

(5) McCune v. National Starch Mfg. Co., 142 N. Y. 106; Crown v. Orr, 140 N. Y. 450; Cahill v. Hilton, 106 N. Y. 512.

(6) Baker v. Allegheny Valley R., 95 Pa. 211.

(7) Baker v. Allegheny Valley R., 95 Pa. 211; Rapho v. Moore, 68 Pa. 404; Indiana Car Co. v. Parker, 100 Ind. 193; City of Indianapolis v. Scott, 72 Ind. 196. See Smith v. New York Central R., 118 N. Y. 645.

These fall under three heads: (1) The inspection of materials, appliances and machinery that are to be used before they are given to workmen; the inspection of cars both (2) before and (3) while using them. The first inquiry belongs to another section, that relating to the furnishing or selection of materials; the latter inquiry, which relates to an employer's duty to keep his appliances and machinery in repair, belongs in this place. Rather than divide the inquiry the whole subject will be considered here. Let us, therefore, begin with the branch relating to the inspection of appliances or machines before putting them into use.

5. As an employer is required by the rule to furnish safe appliances, this also requires or implies his duty of inspecting them before they are put into use. In one of the cases in which this rule was applied to a chain purchased by a railroad company for use on a car, the court said: "It not only can, but its duty requires that it shall, before the chain is placed on a car, cause every link of it used by its employes in places or under circumstances involving danger, in case the chain should break, to be carefully tested and inspected by some one competent to judge of its fitness for the utmost strain that is likely to come upon it." (8)

6. This rule does not exist in New York. (9) The Court of Appeals has declared another to the effect that reliance may be put on the maker of an article. If it is bought of a reputable maker, that is a sufficient guaranty of its quality to dispense with any further test. The Pennsylvania rule is similar. "If a person employs others, not as servant, but as mechanics or contractors in an independent business, and they are of good character, if there was no want of due care in choosing them, he incurs no liability for injuries to others from their negligence or want of skill. If I employ a well known and reputable mechanic to construct a steam engine, and it blows up from bad materials and unskilful work, I am not responsible for any injury which may result, whether to my own servant or to a third person." (10)

7. The Illinois rule is nearly the same. "When employers have, so far as the employment of reasonable skill and experience enables them, employed experienced, skilful and prudent servants in the use of their machinery, have selected good and safe machinery, so far as known, and well-recognized tests can determine, constructed of proper material, free from defects, so far as like tests will disclose,

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(8) Morton v. Railroad, 81 Mich. 433. The New York rule prevailed in Michigan at an earlier date. Grand Rapids R. v. Huntley, 38 Mich. 546; Michigan Central R. v. Coleman, 28 Mich. 440; Grand Rapids R. v. Judson, 34 Mich. 506; Fort Wayne R. v. Gildersleeve, 33 Mich. 133; Michigan Central R. v. Dolan, 32 Mich. 510.

(9) Carlson v. Phoenix Bridge Co., 132 N. Y. 273.

(10) Ardesco Oil Co. v. Gilson, 63 Pa. 150.

neither reason nor justice requires that they should be held liable for injuries that may result." (11)

8. An employer's duty of inspection declared by the United States Supreme Court differs somewhat from this. "It is not necessarily the duty of a purchaser of machinery, whether simple or complicated, to tear it to pieces, to see if there be some latent defect. If he purchases from a manufacturer of recognized standing, he is justified in assuming that in the manufacture proper care was taken, and that proper tests were made of the different parts of the machinery, and that, as delivered to him, it is a fair and reasonable condition for use. We do not mean to say that it is never the duty of a purchaser to make tests or examinations of his own, or that he can always and wholly rely upon the assumption that the manufacturer has fully and sufficiently tested. It may be, and doubtless often is, his duty, when placing the machine in actual use, to subject it to ordinary tests for determining its strength and efficiency." (12)

9. Thus several rules are competing for general adoption—the Michigan rule, requiring employers carefully to test their appliances before giving them to their employes to use; the Illinois rule, requiring such tests to be made as are well recognized; the New York rule, that the purchase from reputable dealers or builders will suffice, and the federal rule that in some cases no tests are required of the employer; in others, that they are.

The federal rule is peculiar; it adopts both views; in other words, the employer can rely on the reputation of the purchaser in some cases; in others, he must test the quality and strength of the appliances or other things to be used by the employe, but sheds not the faintest glimmer of light on the question, "In what cases must tests be made?" The federal rule leaves all in the dark; each case must be settled by itself, whether a test ought to have been made, or whether the employer was justified in trusting to the reputation of the seller.

10. Do these rules apply to the inspection of hammers, saws, ladders, and small tools that are in constant use? We have seen that in the Phoenix Bridge case (13), the rule was applied to a hook for handling iron. Why should not the duty of inspection apply to one thing as well as another; though varying perhaps with respect to the use to be made of the thing itself? Thus, one can readily see that a long ladder ought to be more carefully inspected than a short one, and that a short ladder which is to be used in a very dangerous place ought to be more carefully inspected than one that is to be used in an ordinary manner. Or, again, a chain that

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(11) Illinois Central R. v. Phillips, 49 Ill. 237.

(12) Richmond & Danville R. v. Elliott, 149 U. S. 266.

(13) 132 N. Y. 273.

is to be used on a car ought to be more carefully inspected than a farmer's chain that is ordinarily attached to a drag or harrow, which, if broken, is not likely to lead to any serious accident. Indeed, is it not quite evident that the character of an inspection ought to turn on the use to which the thing is likely to be put, as well as the thing itself? Some things, like a steam boiler, require careful inspection because it will surely be put to severe use; other things, like a chain or ladder may not be, and in the latter class of cases the kind or carefulness of the inspection should depend on the use.

"We cannot hold," says the Supreme Court of Georgia, "that an employer is liable to his servant when he furnishes him with an axe, a wagon, a saw, a hammer or any other tool which appears to be first class, and which subsequently, by some latent defect, breaks and injures the servant. If such were the law every farmer, contractor or other employer would be liable to his employe when he furnished him with tools and they broke and injured him on account of some latent defect which could not be ascertained by the exercise of ordinary care." (14)

In like manner, the Supreme Court of Pennsylvania has remarked: "To allow a servant to handle and use a chain for days, weeks or months, and then hold a master responsible for accidents resulting from wear and tear, or breaking, would be harsh law. That such articles will in time wear out or break is evident, but who is better able to judge of their condition than those who have them in their daily use? To hold otherwise would be to offer a premium for carelessness; for the servant by mere inattention to his duty might allow his tools to become unfit for use, and then visit the consequence upon his employers. A different rule prevails with reference to machinery or perishable articles, which experience teaches us require regular inspection, and which are ordinarily presumed to demand repairs or attention." (15)

11. From the duty of inspecting materials in general we will pass to the duty of inspecting railroad cars. This has given rise to a vast inquiry and hopeless division among the courts. The cars are classified into those owned by the inspecting road and those belonging to other lines. Let us first consider the duty of a company to inspect its own cars and afterward those belonging to other companies.

Its duty to inspect its own cars is by many courts regarded as a primary duty belonging directly to the company as much so as the selection of competent servants and suitable appliances and machinery and, therefore, the inspector acts directly for the company as clearly as though the duty were performed by the president himself. Thus acting he is not a fellow-servant with the servants around him, but is a representative of the company, which consequently is liable for his negligence. (16)

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(14) Ga. Railroad & Banking Co. v. Nelmes, 83 Ga. 70, 76.

(15) Kinney v. Corbin, 132 Pa. 341; Marsh v. Chickering, 101 N. Y. 396; Corcoran v. Milwaukee Gas Light Co., 81 Wis. 191; Cahill v. Hilton, 106 N. Y. 512; Dorsey v. Construction Co., 42 Wis. 596; Stephenson v. Duncan, 73 Wis. 406; Gowen v. Harley, 6 C. C. App. 190.

A few utterances of the courts may be given: Speaking for the New York Court of Appeals, Chief Justice Andrews says: "The duty of a railroad company to use reasonable care to protect its employes from injury while engaged upon its trains embraces the obligation to use reasonable care in furnishing suitable machinery in the first instance, and to keep it in repair so that their lives may not be exposed to unnecessary peril. The duty of proper inspection for the purpose of discovering defects which may arise from use, is a part of the duty owing by the company to its servants. Where an employe is injured from defective machinery, the fact that he was so injured does not alone raise a presumption of negligence on the part of the company." (17) And the Supreme Court of Wisconsin has said in another case against a railroad: "The company was under obligation to use reasonable means to guard against defects in its cars. It was bound to exercise reasonable diligence in watching its cars, inspecting them, and keeping them in repair. The duty it owned its employes. The danger they incurred in entering its service was not to be increased by neglect or failure to perform this legal duty. And if there was a defect in the braking apparatus of the car in question, which had existed so long or was of such a character that the company, by the exercise of ordinary care could have discovered and repaired it, it is liable for an injury sustained by an employe in consequence of such defect." (18)

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(16) That he is not a fellow-servant is the opinion held in the following states:

Colorado: Colorado Central R. v. Ogden, 3 Col. 499; Denver Tramway Co. v. Crumbaugh, 23 Col. 363.

Iowa: Greenleaf v. Illinois Central R., 29 Iowa 14; Braun v. Chicago R., 53 Iowa, 595.

Indiana: Taylor v. Evansville R., 121 Ind. 124; Cincinnati R. v. McMullen, 117 Ind. 439; Indiana R. v. Snyder, 140 Ind. 647; Mitchell v. Robinson, 80 Ind. 281; Ohio R. v. Stein, 140 Ind. 61.

Illinois: Chicago & Alton R. v. Hoyt, 122 Ill. 369; Chicago R. v. Johnson, 55 Ill. 492; Tudor Iron Works v. Weber, 129 Ill. 535; Chicago R. v. Kneirim, 152 Ill. 458.

Kansas: Atchison R. v. McKee, 37 Kan. 592.

Minnesota: Tierney v. Minneapolis & St. Louis R., 33 Minn. 311.

Michigan: Mich. Central R. v. Anderson, 107 Mich. 591; Dewey v. Detroit R., 97 Mich. 329; Balkoff v. Michigan Central R., 106 Mich. 606.

Missouri: Porter v. Hanibal & St. Joseph R., 71 Mo. 66; Corey v. Hanibal & St. Joseph R., 86 Mo. 635; Bowen v. Chicago R., 95 Mo. 268; Rodney v. St. Louis R., 127 Mo. 676; Condon v. Mo. Pacific R., 78 Mo. 567.

New York: Fuller v. Jewett, 80 N. Y. 46; Warner v. Erie R., 39 N. Y. 468; Cone v. Delaware & Hudson R., 15 Hun 172.

North Carolina: Johnson v. Richmond Ro., 81 N. C. 453.

Texas: Houston R. v. Marcelles, 59 Texas 334; Mo. Pacific v. McElyea, 71 Texas 386; St. Louis R. v. Putnam, 1 Texas Civ. App. 142.

West Virginia: Cooper v. Railroad, 24 W. Va. 38; Johnson v. Chesapeake & Ohio R., 36 W. Va. 83.

Wisconsin: Schultz v. Chicago R., 40 Wis. 589; Brabbits v. Chicago R., 38 Wis. 298.

United States: Texas R. v. Barrett, 166 U. S. 617; Northern Pacific R. v. Herbert, 116 U. S. 642; Hough v. Texas R., 100 U. S. 213; U. S. Little Rock R. v. Moseley, 56 Fed. 1009; Railroad Co. v. McDade, 135 U. S. 569; Railroad Co. v. Hambly, 154 U. S. 357; Railway Co. v. Archbald, 170 U. S. 665; New Orleans R. v. Clements, 40 U. S. Ct. of App. 465.

This rule, however, does not prevail everywhere, and among the states holding a contrary view is Pennsylvania. The following is the reasoning of the court: "If the company employ competent and skilful persons for the purpose of inspection, and afford them reasonable opportunities and facilities for the work under proper instructions, the company will not ordinarily be liable for the negligent performance of the work by their employes, to a fellow-employe, unless the company knew, or by ordinary diligence ought to have known of the defective manner in which the inspection was conducted. We are clearly of opinion too that a brakeman and a car inspector are in the same circle of appointment; they co-operate in the same business, and the former knows that the employment of the latter is one of the incidents of their common service." (19)

12. Still greater differences have arisen concerning the rule that ought to be applied to the inspection of foreign cars. In the first place the distinction must be kept clearly in mind between foreign cars that are imperfect because they are not in good condition, and those which are in good condition but imperfect because they are faulty in construction for use on another road than its own. Thus,

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States in which an inspector does not represent his employer and is a fellow-servant:

Arkansas: St. Louis R. v. Rice, 51 Ark. 467; St. Louis R. v. Gaines, 46 Ark. 555.

Alabama: Nashville R. v. Foster, 10 Lea (Tenn.) 351; Mobile R. v. Thomas, 42 Ala. 672.

Massachusetts: Hopkins v. Eastern R., 119 Mass. 419; Mackin v. Boston & Albany R., 135 Mass. 201.

Maryland: Wonder v. Baltimore & Ohio R., 32 Md. 411; Yates v. McCullough Iron Co., 69 Md. 370.

Ohio: Railroad v. Webb, 12 Ohio St. 475; Railroad v. Fitzgerald, 42 Ohio St. 318.

Tennessee: Railroad v. Foster, 10 Lea, 351.

(17) Baily v. Rome & Watertown R., 139 N. Y. 302, 305.

(18) Wedgwood v. Chicago & Northwestern R., 44 Wis. 44, 49.

(19) Philadelphia & Reading R. v. Hughes, 119 Pa. 301, 314.

some foreign cars may be perfectly adapted to its own road, but imperfect on another, by reason of different coupling appliances, or of greater height, whereby they can be coupled only with great difficulty or by using an unusual coupler.

13. A foreign car that is not in good condition need not be received by another road; to this rule all courts agree. (20)

14. If the car is in good condition the receiving road is bound by the same rule as applied to the inspection of its own cars. In the case of Gottlieb v. New York R., Justice Earl said: "It is bound to inspect foreign cars just as it would inspect its own cars. It owes the duty of inspection as master, and is at least responsible for the consequences of such defects as would be disclosed or discovered by ordinary inspection. When cars come to it which have defects visible or discoverable by ordinary inspection, it must either remedy such defects or refuse to take such cars; so much, at least, is due from it to its employes. The employes can no more be said to assume the risk of such defects in foreign cars than in cars belonging to the company. As to such defects the duty of the company is the same as to all cars drawn over its road. The rule imposing this responsibility is not an onerous or inconvenient or impracticable one. It requires before a train starts and while it is upon its passage the same inspection and care as to all the cars in the train." (21)

Likewise the Supreme Court of Missouri declares that "while it is not incumbent upon the receiving company, on receipt of the car, to make tests to discover hidden defects in the construction or in the materials used in the construction, still it is bound to inspect foreign cars, just as it would and is required to inspect its own after they have been in use. The duty devolves upon the company as much in the one case as in the other." (22)

15. In Massachusetts and some other states a different rule is prescribed, that of inspection and nothing more. Thus, in Mackin v. Boston & Albany R. (23), the court declared that the obligation of drawing cars over its road would not extend to such as were in an an unsafe condition; but, as to cars so received, the duty of the other road not was to furnish proper instrumentalities for service, but of inspection, and this duty was performed by the employment of sufficient competent and suitable inspectors, who are to act under proper superintendence, rules and instructions. Whatever may be

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(20) Gottlieb v. New York Central R., 100 N. Y. 462, 469; Mackin v. Boston & Albany R., 135 Mass. 201, 206.

(21) 100 N. Y. 462, 469; Jetter v. Railroad, 2 Abb. Ct. of App., Dec., 458; Jones v. Railroad, 92 N. Y. 628; Miller v. New York Cent. R., 99 N. Y. 657; Reynolds v. Railroad, 64 Vt. 66; Mason v. Railroad, 111 N. C. 482; O'Neil v. Railroad, 9 Fed. 337.

(22) Gutridge v. Railroad, 94 Mo. 468.

(23) 135 Mass. 206.

the law as to other cars, the inspector must be deemed to be engaged in a common employment with the brakeman as to such cars, while in transit, and until they are ready to be inspected for a new service. By this rule, therefore, a foreign car that is defective need not be received, but if it is passed by the inspector and injury follows to some of the employes, a brakeman for example, there is no redress because they are in the same common service. (24)

Is not this conclusion a plain infraction of another rule, namely, that an employer must provide suitable appliances for his employes, and though he may delegate this duty of selecting them to another, yet he is responsible for his negligence and can in no wise escape from it? Surely it is, to that extent, an overthrow of this primary rule.

16. Let us pass now to the receiving of foreign cars that are imperfect simply because they are constructed in a different manner from those of the receiving company. These must be received; the law is imperative, and the risks from attempting to couple them and otherwise manage them while in the possession of the receiving company is one of the risks assumed by employes. Said the Supreme Court of the United States when applying the principle: "It is not pretended that these cars were out of repair, or in a defective condition, but simply that they were constructed differently from the Wabash cars, in that they had double deadwoods or bumpers of unusual length to protect the draw-bars. But all this was obvious to even a passing glance, and the risk which there was in coupling such cars, was apparent. It required no special skill or knowledge to detect it. The employe was no boy, placed by the employer in a position of undisclosed danger, but a mature man, doing the ordinary work which he had engaged to do, and whose risks in this respect were obvious to any one. Under these circumstances he assumed the risk of such an accident as this, and no negligence can be imputed to the employer." (25)

17. Some remarkable consequences follow from this rule. In Massachusetts or Pennsylvania, for example, where an inspector is a fellow-servant with all others in the employ of the company, whether he is inspecting foreign or home cars, the rule is simple enough; and also in the State of Missouri, where he is not a fellow-servant, whether inspecting foreign or home cars.

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(24) Keith v. New Haven R., 140 Mass. 175; Macken v. Boston & Albany R., 135 Mass. 201.

(25) Kohn v. McNulta, 147 U. S. 238, 241; Baldwin v. Railroad, 50 Iowa 680; Indianapolis R. v. Flannigan, 77 Ill. 365; Thomas v. Missouri Pacific R., 109 Mo. 187; Hulett's case, 67 Mo. 239; Railroad v. Black, 88 Ill. 112; Railroad v. Smithson, 45 Mich. 212; Gildersleeve v. Fort Wayne R., 33 Mich. 133; Hathaway v. Railroad, 51 Mich. 253; Tuttle v. Railroad, 122 U. S. 189; Kelly v. Abbot, 63 Wis. 307; Ballon v. Chicago R., 54 Wis. 257; Smith v. Potter, 46 Mich. 258; Whitman v. W. & M. R., 58 Wis. 408; Simms v. Railroad, 26 S. Car. 490.

But the federal rule leads to a ludicrous deduction: A train is composed of both home and foreign cars, as often happens. The inspector, while inspecting a home car is not a fellow-servant, but when inspecting the next, which is a foreign car, he is a fellow-servant. And now he inspects the coupling between two cars—one is a home car and the other a foreign one. It is defective, and the inspector is negligent in performing his duty and does not discover the defect. What relation does he hold to those around him; Is he a fellow-servant, or is he not? Such is the consequence of spinning a rule too fine for practical application.

18. The duty of a car inspector includes all, loaded and unloaded. His duty is just as imperative to inspect the load on a car with the view to its safe transportation as the car itself. Says the Supreme Court of Kansas: (26) "We are unable to see any reason for a distinction between the preparation and inspection of the car itself as a fit instrumentality to be placed in a train and the preparation and inspection of a loaded car to be placed in the train for transportation. Each is an instrumentality to be used in connection with the services necessary to be performed by the trainmen in its transportation, and no distinction between them is seen so far as the obligation of the company or the safety of the employes engaged in handling it are concerned. The inspection in either case is made with reference to the same end, and the person to whom this duty is delegated stands in the place of the company, and the latter is responsible for his acts."

19. We have stated that an employe must examine somewhat the machine or appliance he is to manage; or, as the courts have said, he cannot shut his eyes to the situation around him. He must exercise reasonable care and diligence in such examination and inspection. It will be seen that such work is that of inspection. Now, in cases in which an inspector is held to represent the employer and does nothing more, there can be no difficulty in fastening liability whenever it exists; but an inspector may act in a double capacity as an inspector, in which he represents his employer, and in another capacity, in which he does not. For example, does an engineer, when acting as an inspector of his engine, represent his employer, and if so, will a notice to him of a defect therein given, say by a fireman, have the same effect as a notice to the principal? Again, a brakeman is often required to inspect his brakes; is he, when performing this duty, acting for his principal and doing his work? In one of the cases that has happened in Texas a fireman was injured by the separating of the engine from the tender. It was the duty of the engineer to inspect the engine and make sure that the coupling was safe. Through his

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(26) 54 Kansas 21, 31.

failure to perform this duty, the fireman was injured and the company was held negligent, because his negligence to do his duty as an inspector was regarded as the negligence of the company. The same view is held by the courts in West Virginia. (27)

20. The risk of accident from the previous negligence of servants employed in the same way is one of the ordinary risks of employment. An employe, therefore, is not required to inspect the work of those employed to ascertain whether it is properly done or not by others engaged in the same service. (28)

21. "In respect to the manufacture of implements for the use of his employes, the employer is not bound to insure them as absolutely safe and sound, but is held only to the employment of every precaution against danger which a reasonably prudent man would do under the same circumstances. Where the danger is great, as in the case of railroads, the law requires a very high degree of care on the part of the employer. But where an employer, who is also the manufacturer of the implement used by his employes, has selected his materials with proper care, and employed competent, careful and skilful machinists in their manufacture, he has discharged his duty to his employes, unless he had, or by the exercise of reasonable care might have had, knowledge of existing defects therein." (29)

Section 5.

An Employer Must Provide Safe Places.

1. An employer must provide a suitable place for his employes while at work. A safe place has a varied meaning. In one of the cases a man was employed to clean out an underground pipe, and for this purpose a trench was opened for him. While engaged there the earth caved in and he was killed. A recovery was sought on the ground that his employer had not provided a safe place for him to do his work. The court held that this was the master's duty, and whether he had performed it was a question of fact for the jury to decide. (30) Said Justice Finch: "The defendant owed to his servant the duty of providing a place reasonably safe for the work which he was directed to do. Those who opened the trench were

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(27) Riley v. W. Va. Central R., 27 W. Va. 145.

(28) O'Connor v. Rich, 164 Mars 560.

(29) Chicago & Alton R. v. Mahoney, 4 Ill. App. 262, 266; Chicago R. v. Troesch, 68 Ill. 545; Chicago & Alton R. v. Shannon, 43 Ill. 338; Richardson v. Cooper, 88 Ill. 273.

(30) Kranz v. Long Island R., 123 N. Y. 1, 4; see Stuber v. McEntree, 143 N. Y. 200.

performing the master's duty to the deceased in preparing a suitable place and opportunity for the labor of the intestate in discharge of his duty."

Evidently the nature of the place will vary greatly with the work to be done. A safe mill means a very different thing from a safe coal mine or railroad. (31)

The same rule applies to a railroad company as to any other employer, but the application of it is perhaps more difficult than in other cases, because a railroad is such a complicated thing. In the case of Baltimore & Ohio R. v. Stricker (32), the Supreme Court of Maryland remarked that it was the duty of the company to exercise all reasonable care to provide and maintain safe, sound and suitable machinery, roadways, structures and instrumentalities; and it could not expose its employes to risks beyond those which are incident to the employment, and were in contemplation at the time of the contract of service. Furthermore, the employe has a right to presume that the company has discharged these duties. (33)

2. In applying this rule to a company that has built overhead bridges so low that those who are engaged on top of the cars, brakemen especially, must stoop when passing them, to prevent accident, several minor rules have been wrought out that will be stated.

One rule is that a company is not required to build such bridges high enough for a man to stand upright on top of a car. "Such structures," says Chief Justice Beasley, of the Supreme Court of New Jersey, "would often be inconvenient, and sometimes perhaps impracticable." The company, therefore, in that case owed no duty to the injured man "not to subject him to the danger into which he fell." (34)

On the contrary, an overhead bridge not high enough for an employe to stand upright on top of a car is by many courts regarded as improperly built. Says the Supreme Court of Indiana: "It seems to us that a railroad company is, and ought to be, required to construct and maintain its roadway and appendages, and its overhead structures in such manner and condition that its employes or servant can do and perform all the labors and duties required of him with reasonable safety." Such a bridge is regarded as defective and dangerous by many courts. (35)

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(31) King v. Boston & Worcester R., 9 Cush. 112; Snow v. Housatonic R., 8 Allen 441; Gilman v. Eastern R., 10 Allen 236 and 13 Allen 433; Cayzer v. Taylor, 10 Gray 274; Seaver v. Boston & Maine R., 14 Gray 466; Coombs v. New Bedford Cordage Co., 102 Mass. 572, 583; Huddleston v. Lowell Machine Shop, 106 Mass. 282; Fifield v. Northern R., 42 N. Hamp. 225.

(32) 51 Md. 47, 69.

(33) Chicago R. v. Swett, 45 Ill. 197; Illinois Central R. v. Welch, 52 Ill. 183; Chicago R. v. Russell, 91 Ill. 298; Hough v. Railway, 100 U. S. 213; Indiana Car Co. v. Parker, 100 Ind. 181; Wonder v. Baltimore & Ohio R., 32 Md. 411; O'Connell v. Baltimore & Ohio R., 20 Md. 212.

(34) Baylor v. Railroad, 40 N. J. Law 23.

Although a bridge may be unsuitable or defective in character, yet an employe cannot recover for an injury caused by it when he knew of its existence, or was properly warned of its location and of the danger, for then he assumes the risk; but when he is not informed or does not know of its existence, then he can recover. The rule has been well stated by Justice Trunkey. "Where a railroad company negligently places an obstruction over its roadway, dangerous to the lives of its employes, it fails in its duty to them and, therefore, if a person enters the service of the company in ignorance of such danger, and remains ignorant thereof until injured or killed by it, the company is liable for damages. But if the employe had knowledge of the nature and degree of the peril when he entered the service, or continued in the service after such knowledge without protest and promise of amendment, the case is different." (36)

3. The same rules applies generally in placing tanks, cattle chutes and other structures so near the track as to endanger the lives of employes. It is negligence to build or keep them there. Yet those who know of their existence, or have fair warning of their danger and remain in the service, have no cause for complaint if injured.

The Supreme Court of Wisconsin, while adopting the doctrine, reinforces it with another argument: (37) "If a uniform custom of railroad companies to use structures unnecessarily dangerous to persons employed in operating trains had been proved, we should hesitate gravely before holding that the custom should excuse the danger. The operation of railroad trains is essentially highly dangerous, and it is a duty of railroad companies, too plain for discussion, to use all reasonable skill to mitigate, tolerating nothing to aggravate the necessary danger." (38)

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(35) Baltimore & Ohio R. v. Rowan, 104 Ind. 88; St. Louis R. v. Irwin, 37 Kan. 701; Chicago & Alton R., 116 Ill. 206; Louisville R. v. Wright, 115 Ind. 378; Chicago R. v. Carpenter, 8 C. C. of App., 56 Fed. 451; Chicago R. v. Johnson, 4 N. E. Rep. 381 (Ill.).

(36) Cases in which he knew and could not recover:

Baltimore & Ohio R. v. Stricker, 51 Md. 47; Clark v. Richmond & Danville R., 78 Va. 709; Owen v. New York Central R., 1 Lans. 108; Sherman v. Rochester & Syracuse R., 17 N. M. 153; Faulkner v. Erie R., 49 Barb. 324; Warner v. Erie Erie Railway Co., 39 N. Y. 468; Devitt v. Pacific R., 50 N. Y. 302; Pittsburg R. v. Sentmeyer, 92 Pa. 276; Brossman v. Lehigh Valley R., 113 Pa. 490; Lynch v. New York R., 63 Hun 635; Wallace v. Central Vt. R., 63 Hun, 632; Chicago v. Alton R., Matthews, 39 Ill. App. 541; Altmann v. Gabriel, 28 Minn. 132; Gibson v. Erie Railway Co., 63 N. Y. 449; Clark v. St. Paul R., 28 Minn. 128.

Cases in which the employe did not know and recovered:

Illinois Cent. R. v. Welch, 52 Ill. 183; Chicago R. v. Russell, 91 Ill. 298; Flanders v. Chicago R., 51 Minn. 193; Georgia Pacific R. v. Davis, 92 Ala. 300; Pidcock v. Union Pacific R., 19 Pacific Rep. (Utah) 191; Bois v. Northern Pacific R., 5 Dak. 308; Kearns v. Chicago R., 66 Iowa 599; Allen v. Burlington R., 57 Iowa 623; see Gould v. Chicago R., 66 Iowa 590, and Davis v. Columbia R., 21 S. Car. 93; Williamson v. Newport News R., 34 Vt. 657.

(37) 42 Wis. 583, 597.

4. When a scaffold is regarded as a place, the same rule applies to it as to any other place for working—it must be necessarily safe. (39)

When it is regarded as an appliance, (40) then it may be considered in a double aspect. Under one aspect the master is bound by the same rule that applies to every other appliance, it must be reasonably safe; and this rule applies to him whether it is completed or not. Consequently, if an accident occurs while building it in which the master is negligent, or any of his employes, he is responsible.

Under the other aspect he is bound only for the materials entering into its composition—these must be reasonably safe. In using these, however, the men are regarded as fellow-employes, the same as when doing any other kind of work, and their master is not liable for their negligence, unless he was negligent in the beginning in selecting them.

The question whether a scaffold or apparatus that is to be built must be regarded as an appliance which an employer is required to furnish his servants under the general rule requiring him to furnish safe and suitable appliances for their work, or whether it is to be regarded simply as a piece of work to be done for which the employer is responsible only for the furnishing of suitable material and competent men for putting them together, received an elaborate discussion in Peschel v. Chicago & St. Paul R. (41) The apparatus in this case was to be used for setting up a water tank and windmill, and the different parts were suitable for the purpose, but in erecting them a workman was injured. The majority of the court declared that "the work of the servants in adjusting the detached machinery for use was a common employment which they were hired to do, and for which they were paid. I see no escape from this reasoning which appears logical and sound."

Justice Ingraham, speaking for the Supreme Court of New York, (42) after an elaborate review of the cases decided by the highest court in that state thus formulates the rule: "Where an employer employs mechanics to do a certain amount of work, the doing of which requires the use of scaffolds, which it is a part of the work of the mechanics so employed to construct, and the employer furnishes proper materials with which to construct the scaffolds, the negligent use of such materials, either by improperly uniting them together, or by selecting materials not proper for the particular use for which they are selected, whereby one of such mechanics is injured, as the accident was not the result of the neglect of duty that the master owed to his employes, the master is not liable; and that, to establish a cause of action for such an injury, the plaintiff must prove, in addition to the fact that there was negligence in the selection of the materials for the building of the scaffold, the additional fact that the master, or some one that stood in the relation of representative of the master, assumed to construct the scaffold, and then directed the employes to use it as a constructed scaffold."

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(38) McKamara v. MacDonough, 102 Cal. 575; Conner v. Construction Co. 27 Fed. 629. See Noyes v. Wood, 102 Cal. 389; Haworth v. Seever Mfg. Co., 87 Iowa 165.

(39) McCone v. Gallagher, 44 N. Y. Supp. 697.

(40) Butler v. Townsend, 126 N. Y. 105.

(41) 62 Wis. 338.

(42) McCone v. Gallagher, 44 N. Y. Supp. 697.

In the case of a defective staging used for building a bridge, the Supreme Court of Missouri remarked that "a servant is not a mere machine, employed to drive a nail here or a spike there, where directed by the master or some one representing him. Many things involving the exercise of judgment may properly be left to the servants. Hence, it has been held, where the master employs competent workmen, and provides suitable material for staging and entrusts the duty of erecting it to the workmen as a part of the work which they are engaged to perform, that he is not liable to one of the workmen for injuries resulting to one of them from the falling of the staging. The negligence in such cases resolves itself into negligence of a fellow-servant, and the principle has been applied under a variety of circumstances. (43) It is just as well settled that if the master undertakes to furnish structures to be used by the servant in the performance of his work, the master must use due care in the erection of the structures, and, if there is negligence on his part, or negligence on the part of some one representing him in that respect, he is liable for injuries sustained by the servant." (44)

The Supreme Court of Minnesota, however, has made the following ruling under which there is not likely to arise many question concerning scaffolds: When the general work in which servants are engaged includes the construction or preparation of appliances, with which they are to do their work, for example the making of a scaffold, they are to be deemed fellow-servants as much while making this as in erecting the building for which the appliance was made. In other words, the construction of the scaffold and the building are to be regarded as one enterprise or undertaking in which all are employed as fellow-servants. (45)

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(43) Kelley v. Norcross, 121 Mass. 508; Kellea v. Faxon, 125 Mass. 485; Armour v. Hahn, 111 U. S. 313; Peschel v. Railroad, 62 Wis. 338.)

(44) Black, J., Bowen v. Chicago & Kansas City R., 95 Mo. 268, 277; Arkerson v. Dennison, 117 Mass. 407.

5. If an employer engages a competent scaffold builder to erect one, which proves defective, the latter is regarded as an independent contractor, and it may be accepted without inspection. (46)

6. A large number of questions has arisen on this subject. Suppose a scaffold is erected for one purpose, for example, in putting up a cornice, and is subsequently used for another, painters to paint the cornice, and it should give way while a painter was at work, what then? In a case of this nature the master was held not liable. (47)

7. Furthermore, in supplying material it is not the employer's duty to supervise the selection of every stick that is used. It is said that he fulfills his duty when he furnishes an abundance of material from which his servants can select what is needed. (48)

8. It is the duty of an employer to use all reasonable care to protect his servant from extra hazard. He should not direct him to work in a place which he knows, or might with reasonable care and diligence have ascertained to be dangerous. (49)

9. There is one important limitation to this rule touching an employer's duty to provide a reasonably safe place for his servants to pursue their employment. It is the rule that applies to those servants who, from the nature of their occupation, are constantly changing their places. It may be stated in the language of one of the most recent cases: "While it is the duty of the master to exercise ordinary care to furnish the servants a safe place in which to work, there is an exception to that rule as well established as the rule itself, namely, that where the work which the servant is employed to perform is such work as neecssarily involves the constant change of the place where the work the servant undertakes to do, then the servant assumes the risk necessarily and ordinarily incident to such changes." (50)

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(45) Marsh v. Herman, 47 Minn, 537; Lindvall v. Woods, 41 Minn. 212; Fraser v. Red River Lumber Co., 45 Minn. 235.

(46) Devlin v. Smith, 89 N. Y., 470; Butler v. Townsend, 126 N. Y. 105.

(47) Hoar v. Merritt, 62 Mich. 386.

(48) Ross v. Walker, 139 Pa. 42. For other cases relating to the use of materials, see Dewey v. Parke-Davis Co., 76 Mich. 631; Haworth v. Seevers Mfg. Co., 87 Iowa 765; Brown v. Gilchrist, 80 Mich. 56; Brothers v. Cartter, 82 Mo. 372; Beeson v. Green Mt. Mining Co., 57 Cal. 20.

(49) Consolidated Ice Machine Co. v. Kieffer, 26 Ill. App. 466.

(50) Rogers, J., Browe v. King, 40 U. S. Ct. of App. 545, 549; Railway Co. v. Jackson, 12 U. S. Ct. of App. 48; City of Minneapolis v. Lundin, 7 U. S. Ct. of App. 525.

Section 6.

Assistance.

1. The employer must supply his servant with adequate help, not only in quality but in quantity. Whether he has done so is a question of fact. This question arose in Flike v. Boston & Albany R., (51) relating to servants employed in conducting a train. Chief Justice Church said: "It was clearly the duty of the corporation in making up and dispatching the advance train, to supply it with suitable machinery and sufficient help for the business and journey which it was about to undertake; and if there was any want of cars in these respects, which caused the injury, it is liable." (52)

The same principle has been asserted in other cases, though the existence of such a rule has been positively denied in Illinois.

Section 7.

Instructions.

1. Let us now inquire into the duty of employers to inform their servants concerning their employment, the appliances they are to use and the dangers to which they are exposed. The most general rule of all is that he is to make proper rules and give them due publicity. (53) A railroad corporation, for example, is required to

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(51) 53 N. Y. 550.

(52) Mad River R. v. aBrber, 5 Ohio 541; Booth v. Boston & Albany R., 73 N. Y., 38; Philadelphia & Reading R. v. Hughes, 119 Pa. 301, 314, 315.

(53) Illinois: Illinois Central R. v. Whittemore, 43 Ill. 420; Chicago R. v. McLallen, 84 Ill. 109; Chicago & Northwestern R. v. Moranda, 83 Ill. 302.

Indiana: Ohio & Miss. R. v. Collarn, 73 Ind. 261.

Iowa: Cooper v. Railroad, 44 Iowa 134; Hoffbauer v. Railroad, 52 Iowa 342.

Kansas: Hanibal & St. Joseph R. v. Kanaley, 39 Kan. 1.

Kentucky: Alexander v. Railroad, 83 Ky. 598.

Maryland: Cumberland & Pittsburg R. v. State, 44 Md. 283.

Massachusetts: Ford v. Fitchburg R., 110 Mass. 240; Old Colony R. v. Tripp, 147 Mass. 35.

New Jersey: Smith v. Oxford Iron Co., 42 N. J. Law 467.

New York: Berrigan v. New York Railroad, 131 N. Y. 582; Abel v. Delaware & Hudson R., 103 N. Y. 581; Slater v. Jewett, 85 N. Y. 62; Besel v. New York R., 70 N. Y. 171; Sheehan v. New York Central R., 91 N. Y. 339; Dana v. New York Central R., 92 N. Y. 639; Corcoran v. Delaware & Hudson R., 126 N. Y., 673; Morgan v. Hudson River Ore & Iron Co., 133 N. Y. 666; Ford v. Lake Shore R., 124 N. Y. 493.

Ohio: Wolsey v. Railroad, 33 Ohio At. 227; Pittsburg R. v. Henderson, 37 Ohio St. 549; Lake Shore R. v. Lavalley, 36 Ohio St. 221.

Pennsylvania: Patterson v. Railroad, 76 Pa. 389; Lewis v. Seifert, 116 Pa. 628.

Texas: Pilkinton v. Railroad, 70 Texas 226.

Wisconsin: Luebke v. Railroad, 63 Wisconsin 91.

United States: Hough v. Railway Co., 100 U. S. 213.

use ordinary care and to anticipate and guard against such accidents and casualties as may reasonably be foreseen by its managers when exercising ordinary care.

In Berrigan v. New York R., the court remarked: "The defendant was only bound to use ordinary care in formulating risks, and it is not reasonable to proceed upon the assumption that every injury to an employe can be guarded against and prevented by making such rules. It was the duty of the defendant to anticipate and guard against by rules and otherwise only such accidents and casualties as might reasonably be foreseen by the managers of the corporation exercising ordinary care and prudence." (54)

2. The application of this rule involves the following questions: In what cases are any rules or regulations whatever required for the safety of employes; in what cases were the rules proper or suitable.

3. Not every business requires the making and formulating of rules, but when the business relates to the conducting of railroads, factories, mines and other pursuits where large numbers are employed and the dangers are considerable, the duty clearly exists to make and promulgate such rules as will give reasonable protection from injury to the employes. Thus, in Morgan v. Hudson River Ore & Iron Co., (55) the court said: "The failure to adopt rules is not proof of negligence, unless it appears from the nature of the business in which the servant is engaged that the master, in the exercise of reasonable care, should have foreseen and anticipated the necessity of such precautions." (56)

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(54) 131 N. Y. 582.

(55) 133 N. Y. 666.

(56) Alabama: Georgia Pacific R. v. Davis, 92 Ala. 300.

Georgia: Central Railroad & Banking Co. v. Kitchens, 83 Ga. 83; Rome Co. v. Dempsey, 86 Ga. 499; Sloan v. Georgia Pacific R., 86 Ga. 15; Georgia R. v. Rhodes, 56 Ga. 645.

Illinois: Abend v. Terre Haute R., 111 Ill. 202; Quick v. Indianapolis R., 130 Ill. 334.

Iowa: Conners v. Burlington R., 74 Iowa 383; Deeds v. Chicago R., 74 Iowa 154; Youll v. Railroad, 66 Iowa 346.

Maine: Shauny v. Androscoggin Mills, 66 Me. 429.

Maryland: Gordy v. New York R., 75 Md. 297.

Michigan: Gardner v. Railroad, 58 Mich. 584; Karrer v. Detroit R., 76 Mich. 400; Lyon v. Railroad, 31 Mich. 429.

Mississippi: Memphis R. v. Thomas, 51 Miss. 537.

Missouri: Francis v. Railroad, 110 Mo. 387; Schaub v. Hannibal R., 106 Mo. 74.

New York: Guenther v. Lockhart, 61 Hun 624.

Ohio: Wolsey v. Railroad, 33 Ohio 227.

Tennessee: Louisville R. v. Wilson, 88 Tenn. 316; East Tenn. R. v. Smith, 89 Tenn. 114.

Texas: Gulf R. v. Ryan, 69 Texas 665; Pilkinton v. Gulf R., 70 Texas 226; San Antonio R. v. Wallace, 76 Texas 636.

In a recent case against a saw mill company an injured employe contended that the company was negligent in not having special rules for conducting the business. The court thought otherwise, declaring that "the business was not complex. There was no evidence that it was customary in saw mills to direct employes by special rules, and it could not be so held as a matter of law or submitted to the jury to decide without evidence. In complex employments, like railroads, rules have been held to be necessary. To require them in the simpler employments would only embarrass them without useful effect." (57)

4. Employes in many cases well know that regulations exist, and when they do it is their duty to read them. This is especially true of railroads. Indeed, this is so well understood that the courts take judicial notice of the practice. As this is the rule the fault in law is, therefore, the employe's if he does not know the regulations that are made for his guidance. (58)

5. To permit an employe to disregard a rule is in effect the same thing as to use defective machinery. Says the New York Court of Appeals: "No distinction exists in principle between permitting the use of defective machinery and permitting employes to habitually disregard the safeguards that have been provided to insure the safe running and operation of trains." (59)

6. If an employe has disobeyed a particular order or rule, he should be discharged, and not to do so is negligence. Thus, a company was notified that its engineers gave the control of its engines to firemen in direct violation of its orders. Clearly the company should have discharged them after receiving such a notice. (60) There have been many cases, however, of such frequent disregard of the rules that the master is considered as having acquiesced in their violation. In such cases, therefore, the existence of the rules has not prevented a recovery. (61)

Virginia: Norfolk R. v. Briggs, 14 S. E. 753; Darracott v. H. 83 Va. 288; Williams v. R., 15 S. E. 522.

Federal: Robertson v. Comelson, 34 Fed. 716; New Jersey R. v. Young, 1 U. S. Ct. of App. 96; Russell v. Railroad, 47 Fed. 204.

(57) Olson v. North Pacific Lumber Co., 40 U. S. Ct. of App. 429. In what cases are rules required: Shepherd v. Northern Central R., 63 Hun 634; Byrnes v. New York R., 71 Hun 209; Texas & Pacific R. v. Cumpston, Texas Civ. App. 23 S. W. 47.

(58) Slater v. Jewett, 85 N. Y. 68; Pilkinton v. Railroad, 70 Tex. 226; Alexander v. Railroad, 83 Ky. 598.

(59) Coppins v. Railroad, 122 N. Y. 563; also references in note 61.

(60) Ohio & Miss. R. V. Collarn, 73 Ind. 261.

(61) Hissong v. Richmond R., 91 Ala. 514. See Richmond R. v. Jones, 92 Ala. 218.

Kansas: Kansas City R. v. Kier, 41 Kan. 661.

Kentucky: Alexander v. Railroad, 83 Ky. 590.

7. Of course, the notice must be given to the employer or one who properly represents him. (62)

8. There are many special rules that are made for unusual occasions and the above rule can hardly be applied to these. The most noteworthy are the special rules constantly made for the running of trains. What is the duty of the employer in respect to these? The court started out boldly with the rule, as we have seen, that employers must select suitable employes, appliances, places for working and also make proper regulations. And this was a positive primary requirement. If an employer, however, does not attend to this primary duty himself, but entrusts its performance to another, is he to be held strictly as though he had done it himself? He cannot shield himself by saying that he has appointed another whom he supposed was competent to do it for him, and who has proved unfaithful.

9. This rule, holding the employer to the same degree of liability when acting through another in performing the primary duty as though he were acting himself, has in some states been modified. (63) If an employer selects an agent who is supposed to be competent, his duty is done. He may fail, the rule or order may never be received, an employe may be injured in consequence, but this is one of the risks he assumes when entering his master's service. This was applied in a case relating to an order for the running of a train that was not properly sent forward. "It is not true," says Chief Justice Folger, "that on an occasion like this, it is the duty of the master, or a part of his contract to see to it, as with a personal might and touch, that notice of a temporary and special interference with a general time table comes to the intelligent apprehension of all those whom it is to govern in the running of approaching trains. It is utterly impracticable so to do, and a brakeman or a fireman on a train knows that it is, as well as any person connected with the business. He knows that trains will often and unexpectedly require to be stopped and started by telegraphic orders from distant points, and that such orders must, from the nature of the case, be given through servants skilled in receiving and transmitting them. If there is due care and diligence in choosing competent persons for that duty, a negligence by them in the performance of it is a risk of the employment that the co-

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Massachusetts: Hannah v. Railroad, 154 Mass. 529.

Minnesota: Fay v. Railroad, 30 Minn. 234.

Missouri: Barry v. Hannibal & St. Joseph R., 98 Mo. 62.

New York: Sprong v. Railroad, 58 N. Y. 56; Hayes v. Bush Manufg. Co., 41 Hun 407; Whittaker v. Delaware Co., 126 N. Y. 544.

Iowa: Reed v. Railroad, 72 Iowa 166.

Federal: Northern Pacific R. v. Nickels, 4 U. S. App. 369.

(62) Michigan Central R. v. Dolan, 32 Mich. 510.

employe takes when he enters the service." (63) This duty will be more fully considered in the next section of this chapter.

10. An employe cannot ordinarily dispute the reasonableness of a rule or regulation. But he is not required to comply with a rule at the peril of his life, not to perform an act which he knows is unlawful. (64)

11. One class of cases remain for notice, namely, instructions to minors or inexperienced persons. The law seeks to impose a graver duty on employers in making regulations and informing them of dangers, because of their inexperience. We have seen that it is the duty of an employer to make known any defects concerning appliances, places of working, that are not likely to be seen by a workman of ordinary observation. And if he fails to do this he is liable. In other words, it is the employer's duty to put his employe on the same plane with himself in respect to his knowledge of an appliance that he is to use.

12. Minors are presumed to know less than adults, and, therefore the duty of employers to furnish more rules and instructions is greater than in other cases. The duty varies with a child's age and capacity. Says Justice Hunt: "The conduct of an infant of tender years is not to be judged by the same rule which governs that of an adult. The care and caution required of a child is according to his maturity and capacity only, and this is to be determined in each case by the circumstances of that case." (65)

A very good statement of the rule is in Tagg v. McGeorge. (66) "When young persons without experience are employed to work with dangerous machines, it is the duty of the employer to give suitable instructions as to the manner of using them, and warning as to the hazard of carelessness in their use. If the employer neglect this duty, or if he give improper instructions he is responsible for the injury resulting from his neglect of duty. He is not answerable for injury to adults, nor for the injuries to young persons who have had that experience from which knowledge of danger may reasonably be presumed, and that discretion which prompts to care."

Another good exposition of the law is by the Supreme Court of Ohio: "Persons who employ children to work with or about dangerous machinery, or in dangerous places, should anticipate that they will exercise only such judgment, discretion and care as is usual among children of the same age, under similar circumstances, and are bound to use due care, having regard to their age and inexperience, to protect them from the dangers incident to the situation in which they are placed; and as a reasonable precaution, in the exercise of such care in that behalf, it is the duty of the employer, to so instruct such employes, concerning the dangers connected with their employment which, from their youth and inexperience they may not appreciate or comprehend, that they may, by the exercise of such care as ought reasonably to be expected of them, guard against and avoid injuries arising therefrom." (66)

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(63) Slater v. Jewett, 85 N. Y. 61, 72.

(64) Hawley v. Chicago R., 71 Iowa 717; Stephens v. Railroad, 86 Mo. 221. See Norfolk & Western R. v. Williams, 89 Va. 165.

(65) Railroad Co. v. Stout, 17 Wall. 657.

(66) 155 Pa. 368.

13. When, however, a child knows of the danger, then his employer is not required to instruct him. (67)

14. So, too, often a minor has been instructed or warned of a particular danger, and undertakes the employment, he assumes the risk like any other employe. (68)

15. Again, if a person assumes a risk on the promise of his master that he shall thereafter be instructed in his employment, and is injured through his master's neglect to give such instruction, the employe can recover from his employer. (69)

16. The fact that an injured employe is a minor does not affect his legal rights. A minor who goes into service with the consent of his father, is lawfully employed. He has the same rights that any other employe has and no more; and an employer is under the same liability to him as he is to other workmen. (70)

17. An employer must instruct his employe concerning the danger arising from extraneous causes. Says the Supreme Court of California: "There is no doubt that if the employer have knowledge or information showing that the particular employment is, from extraneous causes, known to him to be hazardous or dangerous to a degree beyond that which it fairly imports or is understood by the employe to be, he is bound to inform the latter of the fact. This elementary principle is usually applied to cases in which the employe has sustained injury by reason of some defect or unsoundness in the machinery or materials, unknown to him, about which he

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(66) Rolling Mill Co. v. Corrigan, 46 Ohio St. 283, 293; Truntle v. North Star Woolen Mills Co., 57 Minn. 52; Hayden v. Smithville Mfg. Co., 29 Conn. 548, 558.

(67) Davis v. St. Louis R., 53 Ark. 117. See Little Rock & Miss. River R. v. Leverett, 48 Ark. 331; Fones v. Phillips, 39 Ark. 17; Bauer v. R., 46 Ark. 388; Rummell v. Dilworth, 111 Pa. 343; Hayden v. Smithville Mfg. Co., 29 Conn. 548; Gilbert v. Guild, 144 Mass. 601; Ciriack v. Merchants' Woolen Co., 146 Mass. 182; Probert v. Phipps, 149 Mass. 258; Coullard v. Tecumseh Mills, 151 Mass. 85; Crowley v. Pacific Mills, 148 Mass. 228.

(68) Devitt v. Pacific R., 50 Mo. 302. See Rains v. St. Louis R., 70 Mo. 164. Cases in which he was not sufficiently instructed:

Rummell v. Dilworth, 111 Pa. 343. See Phila. & Reading R. v. Hughes, 119 Pa. 301; Railroad Co. v. Fort, 17 Wall. 553.

(69) McCormick Harvesting Machine Co. v. Burandt, 136 Ill. 170; Swaboda v. Ward, 40 Mich. 420.

(70) King v. Boston & Worcester R., 9 Cush. 112.

is employed to perform labor, and of which the employer knew, or might have known by the exercise of diligence on his part." (71)

Another application of this principle was made in the case of a servant who was injured by the overturning of hot slag in water, causing an explosion. The question was whether he should have been informed of the consequences of putting hot slag in water. The court said that he "must be assumed to have knowledge of natural laws, and of the knowledge of dangerous forces that come to every man of sound mind; and, therefore, the servant could not have received simply for an injury caused by spilling the slag upon himself. But the explosive power of hot slag when cast into water is not within the intelligence of ordinary men. It is doubtful whether many people of education know the force and violence of such an explosion. It is not so much a question whether the injured party has knowledge of all the facts of his situation, but whether he is aware of the danger that threatens him. What avails it to him that all the facts are known, if he cannot make the deduction that peril arises from the relation of the facts. The peril may be a fact, in itself, of which he should be informed." (72)

18. An employer should not expose an inexperienced servant to a dangerous service without giving him warning. He must give him such instruction as will enable him to avoid injury, unless both danger and the means of avoiding it while he is performing the service require are apparent. Nor can he exempt himself from liability by delegating his power to command the servant to another on whom the obligation to instruct and caution is imposed. Says Justice Mitchell: "One of the well recognized duties of a master is not to expose an inexperienced servant, at whose hands he require a dangerous service, to such danger without giving him warning. He must also give him such instruction as will enable him to avoid injury unless both the danger and the means of avoiding it while he is performing the service required are apparent. These are the obligations of the master, and he cannot exempt himself from liability by delegating his power to command the servant to another upon whom the obligation to instruct and caution is also imposed.

"If the agent or servant upon whom the power to command is given exercises the power, and fails to discharge the obligation to the hurt of the servant who is without fault, the failure is that of the master and he must respond. The master having subjected the servant to the command of another without information or caution with respect to all such obligations as the master owes, the other stands in the masters place, and this is so notwithstanding the two servants are, as regards the common employment, fellow servants." (73)

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(71) Baxter v. Roberts, 44 Cal. 188.

(72) Vedder v. Fellows, 20 N. Y. 126; McGowan v. La Plata Mining & Smelting Co., 9 Fed. 861; Smith v. Peninsular Car Works, 60 Mich. 501; Fox v. Peninsular White Lead & Color Works, 84 Mich. 676; O'Connor v. Adams, 120 Mass. 430; Dowling v. Allen, 74 Mo. 13; Perry v. Marsh, 25 Ala. 659; Spelman v. Fisher Iron Co., 56 Barb. 151; Parkhurst v. Johnson, 50 Mich. 70.

19. Besides, a service not dangerous in the beginning may become so, or the danger may be increased while serving. "As it is the duty of the master to inform his servant of increased danger and hazard created by him in the change of machinery or premises, unless the servant has notice, or the change or increased danger are so apparent that he ought to take notice, so when there are dangers and hazards known to the master, or of which he ought to have knowledge by the use of ordinary care, and which are not ordinarily and usually incident to the business, he should inform the servant of such danger when hiring him, unless the danger is so apparent that the servant will be bound to take notice of it." (75)

20. Whether an employer ought to make a particular rule or set of rules, is a question for the decision of the court and not of the jury. So, also, is the question whether a rule is reasonable or not. "There are strong reasons," says Justice Strong, "why the reasonableness of railroad regulations should, in the absence of any positive proof as to their effect, be submitted to the court, as a question of law rather than to the jury as one of fact. Ordinarily, jurors are not aware, nor can they be readily made aware, of all the reasons calling for the rule. They are apt to listen readily to any allegation of injuries on railways. What one jury might deem an inconvenient rule, another might approve as judicious and proper. There would be uniformity. Ordinarily the managers of railways are much better qualified than jurors to ascertain and weigh the exigencies which call for any rule, and, if it should be productive of some inconvenience, to compare that with the evil to be presented or the good to be produced by its adoption. If the question should be deemed one of law there would be eventual uniformity, as any diversity of sentiment in the courts below would be finally harmonized in the court of last resort." (74)

In view of the numerous wanderings of the courts in trying to answer the question who are fellow-servants, we are not convinced by this reasoning of judicial infallibility. It is true that the final court may make a deliverance concerning a rule which other courts must in the future follow, but the final court might go as far astray in doing this as a jury. Surely, all of them cannot be right that are floundering in the hopeless sea of decisions rendered on the questions, who are fellow-servants, that will soon be reviewed. This principle, however, has been established almost everywhere. (76)

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(73) Atlas Engine Works v. Randall, 100 Ind. 293, 297.

(74) Vedder v. Fellows, 20 N. Y. 126, 131.

(75) Zollars, J., Louisville R. v. Wright, 115 Ind. 378, 387, the court citing Hawkins v. Johnson, 105 Ind. 29, 35; Pittsburg R. v. Adams, 105 Ind. 151; Bradbury v. Goodwin, 108 Ind. 286.

Section 8.

The Delegation of Duties.

1. The duties of the employer to furnish competent employes, suitable appliances, etc., above described are personal, and if he delegate them to another his responsibility is not changed. The New York Court of Appeals has remarked: "We understand the principle to be that acts, which the master as such, is bound to perform for the safety and protection of his employes, cannot be delegated so as to exonerate the former from liability to a servant who is injured by the omission to perform the act as duty, or by its negligent performance, whether the non-presence or mis-presence is that of a superior officer, agent or servant, or of a subordinate or inferior agent to whom the duty of the act or the performance of the duty has been committed. In either case, in respect to such act or duty, the servant who undertakes, or omits to perform it, is the representative of the master, and not a mere co-servant with the one who sustains the injury. The act or omission is the act or omission of the master irrespective of the grade of the servant whose negligence caused the injury, or of the fact whether it was or was not practicable for the master to act personally or whether he did or did not do all that he personally could do by selecting competent servants or otherwise, to secure the safety of his employes." (76)

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(76) Whether a rule or regulation is reasonable is a question of law:

Illinois: Illinois Central R. v. Whittemore, 43 Ill. 420; Chicago R. v. McLallen, 84 Ill. 110.

Iowa: Hoffbauer v. Railroad, 52 Iowa, 342.

New York: Vedder v. Fellows, 20 N. Y. 126; Nacy v. Railway Co., 9 Bos. 396; Tullis v. Hassell, 54 N. Y. Sup. Ct. 397; Larow v. New York R., 61 Hun 11.

Ohio: Wolsey v. Railroad, 33 Ohio St. 334.

Tennessee: Louisville R. v. Fleming, 14 Lea 128.

In New Jersey and Georgia, the reasonableness of a rule is a question for the jury: State v. Overton, 24 N. J. 435; Prather v. Railroad, 80 Ga. 427.

In some cases the reasonableness of a rule is declared to be a mixed one of law and fact. Pittsburg R. v. Henderson, 37 Ohio St. 539; Chicago R. v. McLallen, 84 Ill. 116; Bass v. Railroad, 36 Wis. 459; Commonwealth v. Prosser, 7 Met. 596; Day v. Owen, 5 Mich. 520.

(76) Fuller v. Jewett, 80 N. Y. 46, 52; Flike v. Boston & Albany R., 53 N. Y. 549; Booth v. Boston & Albany R., 73 N. Y. 38; Mehan v. Syracuse R., 73 N. Y. 585.

Likewise the Supreme Court of Massachusetts (77) has declared that "the agents who are charged with the duty of supply safe machinery are not to be regarded as fellow-servants of those who are engaged in operating it. They are charged with a master's duty to his servants. They are employed in distinct and separate departments of service, and there is no difficulty in distinguishing them, even when the same person renders service by turns in each, as the convenience of the employer may require."

2. The rule had not been long in existence before the court began to pare it down. While clinging to the first part of the rule, that an employer could not relieve himself from liability to furnish suitable appliances, etc., by delegating another, however competent, to perform this duty for him, he could relieve himself from this responsibility for keeping them in repair by appointing a competent person to do this for him. Massachusetts led off in this departure. In Johnson v. Boston Tow Boat Co., (78) the court said: "One employed in the care, supervision and keeping in ordinary repair of the means and appliances used in a business, is engaged in the common service. Thus, a person charged with the duty of keeping the track of a railway in repair, the chief engineer on a steam vessel, whose duty it is to examine the order; on 'underlooker' in a mine, whose duty it is to examine the roof of the mine and prop it when dangerous; the general foreman and manager of extensive builders and contractors." And in King v. Boston & Worcester R., (79) Justice Fletcher said: "If a corporation itself should be held responsible to its servants that the road, when first used, was safe and sufficient, yet keeping the road in proper repair afterwards would seem to be the work of servants and laborers, as much as any other part of the business of the corporation." In harmony with this rule the persons in charge of a train upon a railroad are regarded as fellow-servants with a laborer employed in repairing the road-bed. (80)

The language of the courts is not always clear on this point; expressions are added by the courts from time to time that leave the reader in doubt concerning what the rule is. Thus, in the case above mentioned, of Johnson v. Boston Tow Boat Co., the court remarked, in the earlier part in their opinion: "The defendant was under obligation to its servants to use reasonable diligence to maintain in suitable condition the appliances furnished for their use. If the defendant exercised that diligence, and provided suitable means for keeping the appliances in proper condition, and employed proper servants to see that the means were properly used, it has fulfilled its duty." The duty to provide suitable appliances, however, is a personal one and liability for any neglect in its performance cannot be evaded, and one might think from reading the above language that the same duty applied to their maintenance and renewal, when, in truth, in that state it does not.

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(77) Ford v. Railroad, 110 Mass. 240.

(78) 135 Mass. 209, 212.

(79) 9 Cush. 112 and 12 Mass. 27.

(80) Gilshannon v. Stony Brook R., 10 Cush. 228.

3. In all the states except Massachusetts this modification or limitation of an employer's duty has been resisted. The court of Maine, speaking through Justice Danforth, says: "The same care requisite in hiring a servant in the first instance must still be exercised in continuing him in the service, otherwise the employer will become responsible for his want of care or skill. The employer will be equally liable for the acts of an incompetent or careless servant whom he continues in his employment after a knowledge of such incompetency or carelessness, or when in the exercise of due care he should have known it, as if he had been wanting the same care in hiring. The same may very properly be said of the machinery. The servant has no more control of the repairs than of the purchase, no more responsibility for the one than for the other. The use of it is for him, and the risk of that use whatever it may be he assumes. That comes within his contract but as part of the same contract; and, as a matter of course, he assumes the responsibility that his work shall be done with due care, and, as the responsibility continues, so long as the means are used, so must the same care be exercised in keeping the required means in the same safe condition as at first." (81)

4. In a more recent case in Michigan, the Supreme Court remarked: (82) "The rule may now be considered as settled in this state, as well as in most of the states, not only that a master is bound to use reasonable care in providing safe tools and appliances for the use of workmen in his employ, but that this is a duty which cannot be delegated to another, so as to relieve him from personal responsibility. The rule adopted by the federal courts, and in most of the states, and which seems to us most in consonance with reason and humanity is that those employed by the master to provide or keep in repair the place, or to supply the machinery and tools for labor, are engaged in a different employment from those who are to use the places or appliances, where provided, and they are not, therefore, as to each other, fellow-servants." As they are not fellow-servants, of course the employer is liable in all cases of negligence in making repairs.

5. It will be seen, therefore, that the rule turns on the question, whether those engaged in making repairs are agents of the em-

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(81) Shanny v. Androscoggin Mills, 66 Me. 420, 425.

(82) Sadowski v. Michigan Car Co., 84 Mich. 100, 105, 106.

ployer or co-servants with the others. If they are agents, then the master is liable; if they are fellow-servants, then the rules applying to fellow-servants applies to them. In the larger number of cases they are held to be agents and not fellow-servants.

6. The case of Davis v. Central Vermont R. (83) is one of unusual interest. A fireman was killed by the washing out of a culvert. It was in an improper condition and this resulted from the negligence of the bridge builder and road master. The defendant contended that the bridge builder, road master and section boss were fellow-servants of the fireman, and that their negligence could not be imputed to the road. In answering this contention the court said: "If the master personally attempts to discharge that part of the work which the relation devolves upon him, and his negligence therein causes injury to the workman, the master is liable therefor. The question is naturally suggested, why should he not also be liable for the negligence of the agent or servant, whom he has appointed to discharge the same duty in his stead, although he has exercised due care to select a person competent and skilful. To such an agent or servant, while performing the duty cast by the relation upon the master, a fellow-workman with the master's servant in the employment, in such a sense that the latter cannot and ought not to recover of the master for injuries sustained through the negligence of the former? If so, the master who performs his part of the duty, as this defendant and all corporations must, by agents and servants, secures an immunity from liability which the master who personally enters the service to manage and direct the performance of the work does not enjoy." (84)

The rule in New York has been clearly stated by Judge Bradley, in the case of an employe in an iron foundry who was injured by a ladle or bucket that was in need of repair. "As the duty," said the court, "was with the defendant to furnish and maintain suitable instrumentalities for the service and to supply a safe place for its employes to do their work, it is responsible to the plaintiff for his injuries if they resulted solely from the defendant's failure to exercise reasonable care in that respect. The separation and adjustment of the apparatus attached to the ladle for its use come within the duty which the defendant assumed to perform, and the servant who did it, whatever may have been his grade in the general service, represented the defendant, and for the consequences of his negligence in the performance of it the defendant is responsible." (85)

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(83) 55 Vt. 84.

(84) Hand v. Vt. & Canada R., 32 Vt. 473.

(85) Sherer v. Holly Mfg. Co., 86 Hun 37, 41, citing Pautzar v. Tilly Mining Co., 99 N. Y. 368; Bushby v. New York R., 107 N. Y. 374; Krauz v. Long Island R., 123 N. Y. 1; Hankins v. New York R., 142 N. Y. 416; Wannamaker v. City of Rochester, 44 N. Y. State Rep. 45.

In truth, for many years Massachusetts and New Jersey were against the entire field in holding that a repairer was a fellow-servant. At last New Jersey retreated, declaring in a recent case, that "on this topic a rational distinction would seem to be that when the employe's duty to inspect or repair the apparatus is incidental to his duty to use the apparatus in the common employment, then he is not entrusted with the master's duty to his fellow-servant, and the master is not responsible to his fellow-servant for his fault, but that if the master has cast a duty of inspection or repair upon an employe who is not engaged in using the apparatus in a common employment with his fellow-servant, then that employe in that duty represents the master, and the master is chargeable with his default." (86) Though this rule is not so broad as that existing in most of the state, it is a wide departure from the former one. (87)

The Supreme Court of Massachusetts still bravely sticks to its first rule unmoved by the fact that the federal courts and courts of every other state hold to the opposite one, and unmoved by the

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In the following cases a repairer represents his employer and is not a fellow-servant:

United States: Western Coal Co. v. Ingraham, 70 Fed. 219; Gowen v. Busk, 76 Fed. 349.

Colorado: Wells v. Coe, 9 Col. 159; Denver Tramway Co. v. Crumbaugh, 23 Col. 363.

Illinois: Tudor Iron Works v. Weber, 31 Ill. App. 306, s. c. 129 Ill. 535; Monmouth Mining Co. v. Erling, 148 Ill. 521.

Indaina: Mitchell v. Robinson, 80 Ind. 281; Romana Oalitic Stone Co. v. Phillips, 11 Ind. App. 118; Neutz v. Jackson Hill Coal Co., 139 Ind. 411.

Iowa: Brann v. Chicago R., 53 Iowa 595; Greenleaf v. Illinois Central R., 29 Iowa 14; Baldwin v. St. Louis R., 68 Iowa 37.

Kansas: Atchison R. v. McKee, 37 Kan. 592; Soloman R. v. Jones, 30 Kan. 601; Union Pacific R. v. Fray, 43 Kan. 750.

Maine: Buzzell v. Laconia Mfg. Co., 48 Me. 113; Shanny v. Androscoggin Mills, 66 Me. 420.

Michigan: Fox v. Spring Lake Iron Co., 89 Mich. 387; Van Dusen v. Betellier, 78 Mich. 492.

Missouri: Hughlett v. Ozark Lumber Co., 53 Mo. App. 87; McMillan v. Union Press Brick Works, 6 Mo. App. 434.

North Carolina: Chesson v. Roper Lumber Co., 118 N. Car. 59.

South Carolina: Gunter v. Graniterville Mfg. Co., 18 S. Car. 262.

Texas: Houston R. Co. v. Marcelles, 59 Texas 334; Mo. Pacific R. v. McElyea, 71 Texas 386; Sabine R. v. Essing, 1 Texas Civ. App. 531.

Vermont: Houston v. Brush, 66 Vt. 331.

Wisconsin: Shultz v. Chicago R., 40 Wis. 589; Brabbits v. Chicago R., 38 Wis. 298.

Pennsylvania: Penn. Canal Co. v. Mason, 109 Pa. 296; Mullan v. Steamship Co., Pa. 32.

Virginia: Norfolk R. v. Ampey, 93 Va. 108.

(86) Nord Deutscher Lloyd S. Co. v. Ingrebregsten, 57 N. J. Law 400, 402.

(87) McAndrews v. Burns, 39 N. J. Law 117; Rogers Locomotive Works v. Hand, 50 N. J. Law 464; Essex Co. Electric Co. v. Kelly, 57 N. J. Law 100.

fact that a more conspicuous example of erroneous judicial logic could hardly be given. Surely, if there is anything in the principle that it is the primary duty of an employer to furnish a suitable appliance in the beginning, the responsibility for which cannot possibly be escaped by delegating the work of selection to another, the duty of repairing it, whenever this is done by a person appointed for the purpose, is none the less the duty of the employer, the responsibility for which he cannot throw on another.

7. Corporations have precisely the same duty as individuals in selecting competent employes for the service required of them; proper places for their employment, and proper appliances for them to use. The fact that the duty must be performed by an agent, president, manager, superintendent or other official in no wise changes the duty or liability of the corporation itself. The rule has been well stated by Justice Gray: "A corporation must, and a master who has an extensive business often does, perform this duty through officers or representatives; but the duty is his and not merely theirs, and for negligence of his duty in this respect he is responsible. To hold otherwise would be to exempt a master, who selected all his machinery and servants through agents or superintendents, from all liability whatever to their fellow-servants, although he had been grossly negligent in the selection or keeping of proper persons and means for conducting his business. In the case of a corporation, the president and directors at least cannot be deemed mere servants, but must be considered as representing the corporation itself." (88)

Of railroads in selecting agents the Supreme Court of Michigan has said that "the charge of looking after various divisions of business and of local management must of necessity be given to many subordinates of greater or less authority, and each of these must be intrusted with considerable discretion, not only in managing the business, but also in choosing their inferiors in position. It is incumbent on the principal, whether individual or company, to have safe rules of business, and to use care in selecting such agents as are immediately appointed. It is also a duty to remove such persons, or to change such regulations, as they have reason to believe unfit. But, until informed to the contrary, they have a right to trust that an agent or officer, carefully chosen, will use good judgment in making his own appointments and doing his own duties; and they have a right to rest upon that belief until in the exercise of that general vigilance which devolves upon themselves, they find they have been mistaken, and, as all men are liable to errors, no one can be bound to treat an agent as incompetent unless for some error or misconduct going to his general fitness for the place." (89)

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(88) Gilman v. Eastern R., 13 Allen 433, 441; Fifield v. Northern R. 42 N. Hamp. 225; Rogers v. Ludlow Mfg. Co., 144 Mass. 198; Couch v. Watson Coal Co., 46 Iowa 1721; Frazier v. Pennsylvania R., 38 Pa. 104.

One other statement of the rule may be given, that of Justice Myrick, of the Supreme Court of California: "An officer having charge of a department of business is the person required to use that degree of diligence in the selection of competent employes, machinery and appliances which is necessary to exempt a company from liability for their negligence. Corporations are liable for injuries arising from the negligence of carelessness of agents or officers in the course of their employment, the same as individuals.

"Whenever the nature of the business is such as to involve the appointment of subalterns by middlemen, and to withdraw the principal from the management of the business, then the principal is liable for the negligence of the middleman in making the appointment, on the ground that the negligence is that of the principal, and not that of the fellow-servant of the plaintiff. A fortiori is this the case when the middleman has direct authority to make such appointment; otherwise it is hard to see in what case a corporation which appoints and dismisses only through a general superintendent, can be liable for negligence." (90)

8. Who are the agents of a corporation, is a question asked by Justice Fletcher fifty years ago, but not answered. "No corporation can act only through the agency of some individual person or persons, a question has sometimes been made as to what particular officer or persons should be considered as the corporation itself, as distinct from the servants of the corporation, for the purpose of settling what should be considered as the neglect of the corporation itself, and not of its servants." Elsewhere we have given an answer. (91)

9. Competency is a question of fact. Only in cases, therefore, when an injury has happened to a servant through the action of another can the question be answered whether the injured servant or the one who injured him was competent. Thus, in one of the cases a servant on a street railway, who was injured by the negligence of the motorman, tried to show that the company had not exercised ordinary care in selecting him. Evidence was taken concerning his fitness and the court declared that the company was not remiss in performing its duty. (92)

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(89) Michigan Central R. v. Dolan, 32 Mich. 513.

(90) Beeson v. Green Mt. Mining Co., 57 Cal. 20, 30.

(91) King v. Boston & Worcester R., 9 Cush. 112, 115.

(92) Gier v. Los Angeles Co., 108 Cal. 129.

Section 9.

Temporary Employment.

1. The assumption of risk by the employe has been stretched even further and covers another class of cases, in which an employe is required to perform other duties more dangerous and complicated than those embraced in the original hiring. If these are undertaken, knowing their dangerous character, the risk is assumed and there can be no recovery for an injury received while executing them. He may not, and doubtless does not, receive any greater reward for assuming the larger risk, on the other hand, it is assumed rather than lose his place. In Leary v. Boston & Albany R., (93) the question was fully considered. The person injured was aiding as fireman on an engine, and knew that this duty was not within his original contract as a laborer. He determined to perform it as a part of his engagement with the defendant rather than lose his position as a laborer. In so doing, he was held to have assumed its necessary risks.

"The plaintiff did this, it is true, rather than lose his position which he had, and which he desired to retain, but by so doing he engrafted this duty on his original contract of which it made a part. Morally, to coerce a servant to an employment, the risk of which he does not wish to encounter, by threatening otherwise to deprive him of an employment he can readily and safely perform, may sometimes be harsh, but when one has assumed an employment, if an additional and more dangerous duty is added to his original labor, he may accept it or refuse it. If he has an executory contract for the original service, he may refuse the additional and more dangerous service; and, if for that reason he is discharged, he may avail himself of his remedy on his contract. If he has no such contract, and knowingly, although unwillingly, accepts the additional and more dangerous employment, he accepts its incidental risks; and while he may require of the employer to perform his duty, he cannot recover for an injury which occurs only from his own inexperience. The employer is not necessarily unjust, because he wishes in his employ a servant who can from time to time relieve a skilled workman, while his ordinary duties will be those of a mere laborer. It must certainly be his right to engage a servant who, while his ordinary duties will be simple and expose him to no danger, is willing as a part of his service, from time to time to assume duties which, in order to be safely performed, require a higher degree of skill, and which expose him to a certain degree of danger." (94)

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(93) 139 Mass. 580, 587.

(94) Houston R. v. Fowler, 56 Tex. 452; Pittsburg R. v. Adams, 105 Ind. 151, 167; Hayden v. Smithville Mfg. Co., 29 Conn. 548.

2. But this is not the rule in all the states. In Indiana, the court has declared that the servant's "implied assumption of risks is confined to the particular work and class of work for which he is employed. There is no implied undertaking except as it accompanies and is a part of the contract of hiring between the parties." Consequently, when a servant is put at work outside of his employment, and is injured by reason of defective machinery, railroad track, etc., without his fault, the master is liable regardless of the care he may have exercised to keep the machinery, railroad track, etc., in a safe condition. "When a servant is thus ordered to work at a particular place, or with particular machinery, etc., outside of his employment, the master impliedly assures him, not only that he has exercised reasonable care to have the place, machinery, etc., in a safe condition, but also that they are used." (95)

3. There is a qualification to the rule. "The master will not be liable if the circumstances are such as to show that the servant is competent to apprehend the danger, and expressly or impliedly assumes the risk, or that his knowledge of the danger was equal to that of his master." (96)

Thus, in one of the cases, a common laborer was temporarily employed in performing a hazardous service, the nature of which he did not understand. Though consenting to perform it, this did not defeat his right of recovery, for he did not understand the risk he was incurring. (97) But if he had understood the danger the master would not have been liable. This may be illustrated by the case of a "trammer" in a mine, who was directed by the captain to assist the miners to "fix the roof—take down some ground." While doing so he was injured by the falling of a rock from the roof which had just been tested in his presence and seemed solid. He had been at work in this mine for several months and knew the dangers. He could not recover. The court remarked: "That when an employe of mature years and of ordinary intelligence and experience is directed by the employer to do a temporary work outside of the business he was engaged to do, and consents to do such work, without objection on account of his want of knowledge, skill or experience in doing such work, no negligence can be predicated upon such state or facts alone. (98) This rule may not be applicable where such temporary work is entirely different in kind, and the perils of which are such that the servant could acquire no knowledge of them in the business for which he was engaged, or where the servant against his objection, is forced to perform such temporary work. The very nature of his employment, the necessary conditions which surrounded him while so engaged and the experience he concedes to have had, forces the conviction that at the time of the accident, he must have known that loosened rock was liable to fall out and injure any one who happened to be underneath." (99)

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(95) Pittsburg R. v. Adams, 105 Ind. 151, 164, 166; Cole v. Chicago R., 71 Wis. 114; Chicago R. v. Bayfield, 37 Mich. 205; Jones v. Lake Shore R., 49 Mich. 575.

(96) Cole v. Chicago & Northwestern R., 71 Wis. 114.

(97) Gill v. Homrighausen, 79 Wis. 634; Davidson v. Cornell, 132 N. Y. 228; Paule v. Florence Mining Co., 80 Wis. 356; Mann v. Oriental Print Works, 11 R. I. 152; Bensing v. Steinway, 101 N. Y. 547.

(98) Cole v. Chicago & Northwestern R., 71 Wis. 114.

The Supreme Court of Missouri has thus expressed the rule: "When a servant of mature years undertakes any labor outside the duties he has engaged to perform, the risks incident to which are equally open to the observation of himself and the master, the servant takes upon himself all such risks. But if an injury results to such a servant from defects unknown to him, but known to the master or ascertainable by ordinary care on his part, and ascertainable as easily by the servant, the master will be liable." (100)

A federal judge has thus formulated the rule: "Where the employer places one employe under the control and direction of another, and the latter in the exercise of the authority so conferred orders the former into a place of unusual danger and thus exposes him to extraordinary peril, of the existence and extent of which he is not advised, the master is liable. This for the reason that, in giving such an order, the superior servants stands in the place of the employer.

"If the employer or his authorized agent leads the employe to expose himself to a danger not ordinarily incident to the employment which is known to the former and unknown to the latter, whereby the latter is injured, an action may be maintained to recover damages for such an injury.

"If the danger is apparent, and is as well known to the employe as to the employer, the former takes the risk of it; but if the employer knew, or by the exercise of ordinary care might have known, that the employment was hazardous to a degree beyond that which it fairly imports, he is bound to inform the latter of the fact or put him in possession of such information." (1)

There is a principle that covers many of the cases of injury while temporarily employed in some manner different from the original hiring. As we have seen the most general of all rules is that the master must provide reasonably safe places for his employes, and his duty to keep them in this condition is equally imperative. Now, if an employe who has engaged to work in such a place, and is taken out of it temporarily and put in another place less safe, that act in all cases is the act of the employer. It is true, that it may, and generally is, done in fact by some foreman or other person in his employ, but this never excuses the master. Says Chief Justice Ruger: "The rule is unqualified that a master is bound to use all reasonable care, diligence and caution in providing for the safety of those in his employ, and furnishing for their use in his work safe, sound and suitable tools, implements, appliances and machinery in the prosecution thereof, and keeping the same in repair. This is the master's duty and he cannot exempt himself from liability for its omission by delegating its performance to another, or having required work to be done by omitting precaution and inquiries as to the time and manner of performance." (2) Now, in many cases of temporary employment in which the employe is subjected to a new hazard, the act must be regarded as the employer's. Is such an act a negligent one on his part? Often it is. It is in all those cases in which the hazard is greater and this is known by the employer and is not known by the employe. On the other hand, if the employe does know and comprehends the new risk, he assumes it, and his employer is relieved from the consequences. (3)

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(99) Paule v. Florence Mining Co., 80 Wis. 350.

(100) Cummings v. Collins, 61 Mo. 520; Hulett v. St. Louis R., 67 Mo. 239.

(1) Thompson v. Chicago R., 14 Fed. 564.

4. If an employe undertakes a temporary service at the request of another fellow-servant, or one having no authority from the master over him, then, of course, the master cannot be held liable for the consequences, however serious or well intentioned he may have been. (4)

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(2) Bensing v. Steinway, 101 N. Y. 547.

(3) Cases relating to temporary employment:

Connecticut: Hayden v. Smithville Mfg. Co., 29 Conn. 548.

Indiana: Copper v. Louisville R., 103 Ind. 305; Atlas Engine Works v. Randall, 100 Md. 293.

Maine: Buzzell v. Laconia Mfg. Co., 48 Me. 113; Wormell v. Maine Central R. Co., 79 Me. 397, 410.

Massachusetts: Russell v. Tillotson, 140 Mass.; Leary v. Boston & Albany R., 139 Mass. 587.

Missouri: Cummings v. Collins, 61 Mo. 520; Hulett v. Railway Co., 67 Mo. 239.

Michigan: Chicago R. v. Bayfield, 37 Mich. 205.

New York: Benzing v. Steinway, 101 N. Y. 547; Wright v. N. Y. Central R., 25 N. Y. 570.

Pennsylvania: Rummill v. Dilworth, 111 Pa. 343.

Rhode Island: Mann v. Oriental Print Works, 11 R. I. 152.

Wisconsin: Paule v. Florence Mining Co., 80 Wis. 356; Cole v. Chesapeake R., 71 Wis. 114.

United States: Thompson v. R., 14 Fed. 564; Railroad v. Fort, 17 Wall. 553.

(4) Knox v. Pioneer Coal Co., 90 Tenn. 546.

CHAPTER IV.

THE ORDINARY RISKS ASSUMED BY EMPLOYES.

1. As we have seen, when an employe agree to labor for a specified compensation, the contract implies that he takes on himself all the natural risks and perils incident to the service. The law presumes, either rightly or otherwise, that the risks are considered in adjusting the amount of compensation he is to receive. "Where the nature of the service is such that, as a natural incident to that service, the servant must be exposed to the risk of injury from the negligence of other servants of the same employer, or from the use of dangerous machinery, such risk is among the natural perils which the servant assumes upon himself, as between himself and the master; and, consequently, there is no liability of the latter to the former for injuries resulting from the negligence of other servants or co-employes in the same common employment, or the use of such machinery. If, however, the master has wrongfully and unjustifiably enhanced the risk to which the servant is exposed beyond the natural risk of the employment, which must be presumed to have been in contemplation when the employment was accepted, as by knowingly or negligently employing incompetent or unfit servants, or supplying defective machinery, in such cases the master may be held liable for the consequences of such negligence." (5)

The rule on this subject is well stated by Chief Justice Cockburn, as follows: "Where a servant is employed on machinery from the use of which danger may arise, it is the duty of the master to take due care, and to use all reasonable means, to guard against and prevent any defects from which increased and unnecessary danger may occur. No doubt when a servant enters on an employment from its nature necessarily hazardous, he accepts the service subject to all the risks incidental to it; or, if he thinks proper to accept an employment on machinery defective from its construction, or from want of proper repair, and with the knowledge of the facts enters on the service, the master cannot be held liable for injury to the servant within the scope of the danger which both the contracting parties contemplated as incidental to the employment. The rule that I am laying down goes only to this, that the danger contemplated on entering into the contract shall not be aggravated by any omission on the part of the master to keep the machinery in the condition in which, from the terms of the contract or from the nature of the employment, the servant had a right to expect that it would be kept." (6) The Supreme Court of Maryland after quoting the above added: "There are many cases maintaining the same general proposition, and the law may be regarded as settled in accordance with this opinion." (7)

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(5) Cumberland & Penna. R. v. State, 44 Md. 292.

(6) Clark v. Holmes, 7 H. & N. 943.

2. Looking more closely at this exposition of the law, what does the court mean by "the natural risks or perils incident to service?" By "natural" the court doubtless means the usual or ordinary risks or perils. Thus, in the case of a locomotive engineer, the risks from running his engine, supposing or believing it is in a fit condition. But the difficulties at once begin to thicken. The ordinary or usual condition of an engine on a railroad like the Pennsylvania, for example, is better than on a road in a bankrupt condition. Again, even the engines on the Pennsylvania railroad differ in respect to their condition. The engines for moving the fastest trains must be kept in the highest possible state of efficiency in order to make the requisite speed, and those for running the slower trains while equally safe, perhaps in some respects even more so, for the service required of them, are kept in a somewhat different condition. Again, the engines used for hauling freight are made differently, and are kept in a different condition than those for hauling passengers. The natural risk, therefore, assumed by an engineer is the risk of running a particular kind of engine unless he is employed to serve on any kind of engine fit for the service it may be assigned. If his terms of employment are broad enough to cover the natural risks resulting from the running of an engine fit for any kind of service, then, in the event of an injury, the above inquiry would be less difficult. But in many cases an employe is transferred from one machine to another of the same kind perhaps, though less safe. Is his employer liable for any injury attending the transfer? Much depends on the contract for hiring, what did the natural risk cover?

A good illustration of the difference between a usual and an unusual risk is contained in the case between Strahlendorf v. Rosenthal. (8) A person was employed in digging a well, and while doing his work assumed all the usual risks of the undertaking. But when he was far down the excavation, the curbing above bent and cracked—strong signs of giving way. Of this the employer knew, but not his employe. Finally the curbing did give way and the employe was injured. It was held that he did not assume the extraordinary hazard of which the employer had clear knowledge. Said the court: "If there existed some extrinsic cause, known to the defendant and unknown to the plaintiff, which increased the hazards of such employment beyond its ordinary and usual hazards, the defendant was bound to inform the plaintiff of the fact which thus increased the perils of the work;" and of the existence of such a cause he certainly did have knowledge. On the other hand, an experienced miner assumes the risk of danger from the falling of ore where this is likely to happen in the ordinary course of his work. (9)

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(7) 44 Md. 292.

(8) 30 Wis. 674.

3. An employe may assume, as we have shown, other risks besides natural ones; unusual or extraordinary risks and to these there is hardly any limit. A machine may be very defective and dangerous to run, but if this is known by the employe, no deception is used, if he comprehends or ought to comprehend the business and the peril, and undertakes to operate it, he assumes the risk. The Supreme Court of New Jersey has thus stated the principle: (10) "Where one enters upon a service he assumes to understand it and takes all the ordinary risks that are incident to the employment. And if this presents special features of danger which are plain and obvious, he also assumes the risk of these." There are multitudes of such cases, and if an employe is injured by one of these, he has no cause of action against his employer.

4. Another rule should be mentioned that is daily applied. "Notwithstanding the general rule that the master is bound to furnish safe and sound materials, machinery, etc., yet if the work upon which the servant is employed consists in whole or in part, in handling unsafe or unsound things, known to him to be so, and which, by the very nature of the business, must be handled while in that condition, the servant assumes the risk for doing so. Thus, a railway servant, employed to removed damaged cars to a repair shop, has no right to complain of injuries suffered from the known defects of such cars. And where a business is obviously dangerous, and is conducted in a manner which is fully known to the servant at the outset, he assumes the risk of its conduct in that manner, although a safer method could have been adopted." (11)

Says the Supreme Court of Indiana: "When a servant enters upon an employment which is, from its nature, necessarily hazardous, he assumes the usual risks and perils of the service. In such cases it is held that there is an implied contract on the part of the servant to take all the risks fairly incident to the service and to waive any right of action against the master resulting from such risk. The master in such cases impliedly agrees not to subject the servant, through fraud, negligence or malice, to greater risks than those which fairly and properly belond to such particular service." (12)

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(9) Paule v. Florence Mining Co., 80 Wis. 350.

(10) Foley v. Jersey City Electric Light Co., 54 N. J. Law 411.

(11) Sherwood, Ch. J., Thomas v. Mo. Pacific R., 109 Mo. 187, 200.

(12) Griffin v. Ohio & Miss. R., 124 Ind. 326, 327; Atlas Engine Works v. Randall, 100 Ind. 293; Pittsburg R. v. Adams, 105 Ind. 151; Taylor v. Evansville R., 121 Ind. 124; Lake Shore R. v. McCormick, 74 Ind. 440.

It will be noted that the risk here assumed is not one growing out of the negligence of employed or employer. Cars, for example, become injured and it is needful to remove them, and in so doing a risk greater than the ordinary daily risk is incurred. The employer is not negligent in seeking to have such cars removed; he would be if he did not direct this to be done. As he is not negligent in securing their removal, neither is an employe negligent who undertakes to do the work. The risks are of daily occurrence that fall under this rule.

CHAPTER V.

FIRST INFRACTION OF THE RULE—EMPLOYES ASSUME ALL APPARENT RISKS.

1. The first great invasion of the rule defining the duties of employers was that an employe, besides assuming the natural, ordinary risks of his employment, also assumes such risks as are, or ought to be apparent to him by ordinary observation; in other words, such risks as are readily discernible by a person of mature age and capacity in the exercise of ordinary care. (13) Thus, a person

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(13) Arkansas: St. Louis R. v. Davis, 54 Ark. 389; Fordyce v. Lowman, 57 Ark. 160; St. Louis R. v. Higgins, 44 Ark. 293.

Colorado: Burlington R. v. Liche, 17 Colo. 280.

Illinois: Chicago R. v. Lonergan, 118 Ill. 41; Camp Point Mfg. Co. v. Ballou, 71 Ill. 417; Chicago v. Merckes, 36 Ill. App. 195; United States Rolling Stock Co. v. Chadwick, 35 Ill. App. 474; Litchfield Co. v. Romanie, 39 Ill. App. 642; Toledo R. v. Black, 88 Ill. 112; Toledo R. v. Ashbury, 84 Ill. 429.

Indiana: Lake Shore R. v. McCormick, 74 Ind. 443; Rietman v. Stolte, 120 Ind. 314; Louisville R. v. Orr, 84 Ind. 50.

Kansas: Sanborn v. Railway Co., 35 Kan. 292; Kansas Pacific R. v. Peavey, 34 Kan. 472; McQueen v. Railroad, 30 Kan. 689; Jackson v. Railway Co., 31 Kan. 761.

Maine: Wormell v. Maine Central R., 79 Me. 397.

Maryland: Michael v. Stanley, 75 Md. 464.

Michigan: Fort Wayne R. v. Gildersleeve, 33 Mich. 256; Botsford v. Michigan Central R., 33 Mich. 256; Michigan Central R. v. Smithson, 45 Mich. 212; McGinnis v. Canada Southern Bridge Co., 49 Mich. 466; Hewitt v. Flint R., 67 Mich. 61; Grand v. Railway Co., 83 Mich. 564; Schroeder v. Car Co., 56 Mich. 132; Jolly v. Railway Co., 93 Mich. 370; Swaboda v. Ward, 40 Mich. 420; Illick v. Railway Co., 67 Mich. 638; Day v. R. Co., 42 Mich. 525; Breenee v. R. Co., 56 Mich. 620.

Minnesota: Wilson v. Railway Co., 37 Minn. 326; Anderson v. Skeley Lumber Co., 47 Minn. 128; Anderson v. Morrison, 22 Minn. 274, 276; Clark v. Railway Co., 28 Minn. 128; Bengtson v. Railway Co., 47 Minn. 486; Hughes v. Railway Co., 27 Minn. 137, 140; Larson v. Railway Co., 43 Minn. 423; Olson v. Railway Co., 38 Minn. 117; Morse v. Railway Co., 30 Minn. 465; Larson v. Railway Co., 43 Minn. 423; Johnson v. St. Paul R., 43 Minn. 53.

New Jersey: Foley v. Electric Light Co., 54 N. J. Law 411.

Iowa: Mayes v. Chicago R., 63 Iowa 562; Kuhns v. Wisconsin R., 70 Iowa 561; Kroy v. Railroad, 32 Iowa 357.

was employed to run an old machine, but its condition was not concealed from or unknown by him. He knew as much about it, and the risk attending its use as the master. The court declared that the latter "could not be required to provide himself with other machinery or with new appliances, nor to elect between the expense of so doing, and the imposition of damages for injuries resulting to servants from the mere use of an older or different pattern. The general rule, therefore, is that the servant accept the service, subject to the risks incidental to it, and where the machinery and implements of the employer's business are at that time of a certain kind or condition, and the servant knows it, he can make no claim upon the master to furnish other or different safeguards." (14)

One of the judicial statements of the rule is the following: "If employe after having a full and fair opportunity to become acquainted with the risk of his situation, makes no complaint whatever to his employer as to the machinery which he knows to be wanting in appliances for safety, takes no precaution to guard against danger, but, accepting the risks, voluntarily continues in the performance of his duties, he cannot complain if he is subsequently injured by such exposure. He is not bound to risk his safety in the service of his master, and he may, if he thinks fit, decline to do that which exposes him to peril."

2. A fuller statement of the modification of the general rule governing employers has been made by Justice Devens: "Though it is a part of the implied contract between master and servant that

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Ohio: Mad River R. v. Barber, 5 Ohio St. 563; Lake Shore R. v. Knittal, 33 Ohio St. 468.

Oregon: Wellman v. Railway Co., 21 Oregon 530; Carlson v. Railway Co., 21 Oregon 450.

Pennsylvania: Payne v. Reese, 100 Pa. 301; Rummill v. Dilworth, 111 Pa. 343; Lehigh Coal Co. v. Hayes, 128 Pa. 294; Barkdoll v. Railway Co., 13 At. 82; New York R. v. Lyons, 119 Pa. 324; Blossman v. Railway Co., 113 Pa. 490; Hawk v. Railroad Co., 11 At. 459; Green & Coates St. Pass. R. v. Bresmer, 97 Pa. 103.

South Carolina: Carter v. Oliver Oil Co., 34 S. Car. 211; Gunter v. Graniteville Mfg. Co., 18 S. C. 262; La Sure v. Graniteville Mfg. Co., 18 S. C. 275; ex parte Johnson, 19 S. C. 492; Davis v. Railway Co., 21 S. C. 93.

Texas: Gulf R. v. Williams, 72 Texas, 159; Rogers v. Galveston City R., 76 Texas 502; Missouri Pacific R. v. Somers, 71 Texas 700; Houston R. v. Barrager, 14 S. W. 242; Gulf, H. & San Antonio R. v. Drew, 59 Texas 10.

Wisconsin: Whitman v. Wisconsin R., 58 Wis. 408; Naylor v. Chicago R., 53 Wis. 661; Stephenson v. Duncan, 73 Wis. 406; Abbott v. McCadden, 81 Wis. 563.

(14) Sweeney v. Berlin & Jones Envelope Co., 101 N. Y. 520, 524; De Forest v. Jewett, 88 N. Y. 264; Gibson v. Erie R. Co., 63 N. Y. 449; Odell v. New York Central R., 120 N. Y. 324; Hickey v. Taafe, 105 N. Y. 26; Williams v. Delaware & Lack. R., 116 N. Y. 628; Davidson v. Cornell, 132 N. Y. 228; Kain v. Smith, 89 N. Y. 375; McGovern v. Central Vt. R., 123 N. Y. 280; Stringham v. Hilton, 111 N. Y. 88; Burke v. Wetherbee, 98 N. Y. 562; Henry v. Staten Island R., 81 N. Y. 373; Laning v. Railroad, 49 N. Y. 521; Hayden v. Smithville Mfg. Co., 29 Conn. 548; Naylor v. Chicago & Northwestern R., 53 Wis. 661.

the master shall provide suitable instruments for the servant with which to do his work and a suitable place where, when exercising due care himself, he may perform it with safety, or subject only to such hazards as are necessarily incident to the business, yet it is in the power of the servant to dispense with this objection. When he assents, therefore, to occupy the place prepared for him, and views the dangers to which he will be exposed thereby, having sufficient intelligence and knowledge to enable him to comprehend them, it is not a question whether such place might, with reasonable care, and by a reasonable expense, have been made safe. His assent has dispensed with the performance on the part of the master of the duty to make it so. Having consented to serve in the way and manner in which the business was being conducted, he has no proper ground of complaint, even if reasonable precaution has been neglected." (15)

3. "Every employer," says Justice Foster, (16) "has the right to judge for himself in what manner he will carry on his business, as between himself and those whom he employs, and the servant having knowledge of the circumstances, must judge for himself whether he will enter his service, or, having entered, whether he will remain."

"The employe," says Justice Taylor, "when accepting an employment, assumes all the risks that are reasonably incident to such employment, and no other, unless the unusual and unreasonable risks of such employment are open and visible and known to and comprehended by the employe, and in such case he assumes all the risks so known to him, whatever they may be." The same court said in another case: "The servant is bound to know, and is said to have assumed, all such dangers of the employment as were open and obvious, and such as he could have discovered by reasonable attention." (17) "He is not bound to know of any defect or omission, and assumes no risk therefrom, if it were practically impossible or unusual for him to ascertain all the special perils." (18)

"The servant takes upon himself the natural and ordinary risks and perils incident to the performance of his labors, whether arising from the carelessness of fellow-servants in the same line of employment or from the manner in which the work is carried on. The qualification to this rule is that the danger contemplated in entering into the contract shall not be aggravated by any omission on the part of the master to keep the surroundings in the condition in which, from the terms of the contract or the nature of the employment, the servant had a right to expect they would be kept." (19)

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(15) Sullivan v. India Mfg. Co., 113 Mass. 396, 398.

(16) Wormell v. Maine Central R., 79 Me. 397, 405; citing Hayden v. Smithville Mfg. Co., 29 Conn. 548; Buzzell v. Laconia Mfg. Co., 48 Me. 121; Shanny v. Androscoggin Mills, 66 Me. 427; Coombs v. New Bedford Cordage Co., 102 Mass. 585; Ladd v. New Bedford R., 119 Mass. 413.

(17) Nordan v. White River Lumber Co., 76 Wis. 130.

(18) Beeson v. Green Mt. Mining Co., 57 Cal. 20, 29. An employe was injured by the derailment of a car on an unfinished track on which he was working. He knew of its condition, therefore, and had assumed the risk: Evansville R. v. Henderson, 142 Ind. 596. An employe who attempted to ride on an engine over an unfinished road and was warned of his danger before starting by the superintendent assumed the risk of injury: Niles v. Minneapolis R., 65 N. Y. 103.

4. The reason for the rule has been well stated by the Supreme Court of New Jersey. "Obvious dangers which the servant enters upon voluntarily are impliedly assumed by him, if he continues in the service. If the servant knows of the defect and it is of such a nature that a prudent person will not abandon the service on account of it, then no negligence can be charged to the master for permitting the defect to continue. If the plaintiff (in the case before the court) was justified in concluding that he could (do the thing desired) ascend a pole and return with safety, by using extra care, the defendant had the right to draw the same conclusion; and in that event the defendant was in no fault if the peril was of that imminent character that it was imprudent on the part of the plaintiff to ascend the pole, there, under the rule of law laid down by the trial court the verdict was wrong. If the plaintiff acted as a prudent man in undertaking to ascend the pole, the injury must be ascribed to mere accident—the casual slipping of the foot. In that case neither he nor his employer is to be held guilty of a want of ordinary care. The servant and the master had equal means of forming a correct judgment. Therefore, whatever want of prudence in taking the risk is chargeable to the one must be imputed to the other. The attempt to engraft this exception upon the general rule introduced the element of the absence or presence of due prudence on the part of the servant into this discussion, which is a circumstance, in my judgment, wholly foreign to it. The immunity of the master rests upon the contract of hiring, and not upon the absence or presence of negligence in either part. The master says to the servant: 'You understand fully the nature of the employment, and the danger attending it. Will you enter upon it?' The servant says: 'I accept it,' and the law implies that he accepts it with all the risk incident to it, without regard to the magnitude of the danger. The question is not whether it was prudent on his part to encounter the peril. In contemplation of law, his undertaking to assume the apparent risk of the work was general and unqualified. He might have restricted his assumption of danger by stipulating that he would take upon himself such liability

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(19) Mielke v. Chicago & Northwestern R., 103 Wis. 4.

to injury only as could be avoided by ordinary care on his part. In the absence of such a term in the engagement, it cannot be introduced by implication without changing its import, and importing into it a condition unfavorable to the master, and which has not his consent. The cases rigidly hold the doctrine that the servant takes upon himself such definite and determinate risks as are obvious, and no action will be against the master for injuries to the servant in such cases." (20)

5. "Although it is not negligence or a breach of legal duty for a master to hire men to work on an old machine merely because there are newer and safer ones in use, yet many of the courts of this country hold that steam railways are bound to keep pace with new inventions in the direction of safety. But this rule is an exceptional one, established upon grounds of public policy, and for the safety of human life. It has never been applied to the relation of master and servant. There the ordinary rule is that the workman takes the risks incidental to his employment." Such are the words of Judge Brown, (21) and they are, doubtless, a correct statement of the law. But why should the law have more regard for the lives of the passengers of a railway than for the lives of its workmen? Are not the latter in quite as helpless condition as the former? Are not many of the risks known and assumed by them assumed unwillingly, because they must do so to find employment? If public policy requires railroads to adopt every improved safety device for the safer carriage of their passengers, ought not public policy to enforce a rule equally imperative for the safe treatment of their workmen?

6. It may be further remarked that a servant does not assume the risks incident to the use of unsafe machinery if he simply knows it is defective, but does not comprehend the risk. "In some cases," the court has remarked, "the risk is obvious on inspection of the thing itself. In other cases the servant may know the character and condition of the instrumentality which he is called upon to use, and yet not have the means of knowing the nature or extent of the risks to which its use will expose him. The master and servant do not necessarily stand on equal footing in this regard. The servant, although a man of ordinary prudence as well as experience, may be quite incapable of appreciating the degree of risk involved in the use of a certain kind of machinery, while the master may be and generally is. It is the master's duty to inform himself in that regard, for on him is involved the duty of exercising ordinary care to supply safe instrumentalities to his servant; whereas the latter has a right to assume, in the absence of

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(20) Foley v. Electric Light Co., 54 N. J. Law 411.

(21) The Maharajah, 40 Fed. 785.

notice to the contrary, or something to put him on inquiry, that the master has performed his duty, and, hence, to a certain extent, to rely on the superior judgment of his master. Hence, it is sometimes said that although a servant may have known of the defects, this will not defeat his recovery unless he knew that the defects rendered the thing dangerous. So, against, it has been held that a servant only assumes a risk which is announced to him, or which is a natural and ordinary incident to the employment, or which, from the facts before him, it was his duty to infer." (22) "It is one things," says Justice Mitchell, "to be aware that machinery is defective, or in a particular condition, and another thing to know or appreciate the risks resulting therefrom. A man of ordinary intelligence and experience may know the actual condition of an instrument with which he is working, and yet not know the nature and extent of the risks to which he is exposed." (23)

7. If a defect or imperfection is apparent and the employe proceeds to work on an assurance given by the employer that it is safe to do so, the employer is liable for the consequences. Says Justice Henry: "In that class of cases the defect or imperfection is apparent, and, to one experienced in the work or in the implements, the danger is also apparent. In such cases, unless the extra hazard is so palpable that no man of ordinary intelligence and prudence would, at the risk of life or limb incur it, the master would be liable to a servant whom he should order to perform the dangerous work, or work not dangerous with implements defective and unsafe." (24)

8. When an employe is exposed to an unusual peril which is known to the employer, but not to the employe, it is not assumed. (25)

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(22) Russell v. Minneapolis R., 32 Minn. 230, 234; Cook v. St. Paul R., 34 Minn. 45.

(23) Wuotilla v. Duluth Lumber Co., 39 Minn. 153, 155.

(24) Aldridge v. Middland Blast Furnace Co., 78 Mo. 559, 565.

(25) Connecticut: Wilson v. Willimantic Linen Co., 50 Conn. 433.

Illinois: Chicago R. v. Avery, 109 Ill. 314; Richardson v. Cooper, 88 Ill. 270; Pennsylvania Co. v. Lynch, 90 Ill. 333.

Indiana: Lake Shore R. v. McCormick, 74 Ind. 440; Columbus R. v. Arnold, 31 Ind. 174; Indiana Car Co. v. Parker, 100 Ind. 181; Pennsylvania Co. v. Whitcomb, 111 Ind. 212; Cincinnati R. v. McMullen, 117 Ind. 439; Cincinnati R. v. Roesch, 126 Ind. 445.

Maryland: Wonder v. Baltimore & Ohio R., 32 Md. 418; Baltimore & Ohio R. v. Stricker, 51 Md. 47.

Massachusetts: Lawless v. Railroad, 136 Mass. 1.

Minnesota: Eicheler v. St. Paul Furniture Co., 40 Minn. 263.

New York: Ellis v. Railroad, 95 N. Y. 546.

Pennsylvania: Payne v. Reese, 100 Pa. 301.

South Carolina: Gunter v. Graniteville Mfg. Co., 18 S. Car. 262.

Wisconsin: Behm v. Armour, 58 Wis. 1; Naylor v. Railroad, 53 Wis. 661; Bessex v. Railroad, 45 Wis. 477; Strahlendorf v. Rosenthal, 30 Wis. 674.

United States: Washington R. v. McDade, 135 U. S. 571; Hough v. Railroad 100 U. S. 213; Railroad v. Fort, 17 Wall. 553.

Thus, in one of the earlier cases an accident happened to an employe from a defect in a floor which was known by the employer but not by the employe. The employer was held liable. The rule more fully expressed is this: An employer who knows that a dangerous place exists in his premises, for example, is responsible for an injury caused thereby to a workman entering there by his master's order and not notified of the danger, unless he also has not exercised proper care. (26)

The principle was also applied in the case of an injury to a brakeman from an unknown projecting awning. Said the court: "It would have been morally impossible for him to have ascertained the existence of all such special perils as this, which caused the injury, and there is no reason for supposing that he had acquired such knowledge before the accident, as he had been but two months upon the road, and had always passed the station, where he was injured, in the night, except upon two trips. But the peril had long before been observed by other employes, and the attention of both the division superintendent and the division engineer called to it. This circumstance takes away all excuse from the company, and brings the case within the legal proposition that it was a peril known to the employer and not revealed to the employe." (27)

In another case a workman was injured by falling through a defective floor. He passed over the floor during his daily employment and knew that it was decayed, but did not know the extent of its weakness. The court, speaking through Chief Justice Chapman, remarked: "The evidence in this case does not tend to show that the defendant's machine shop was not properly built, but it does tend to show that a portion of the floor, over which the plaintiff had occasion to pass in the discharge of his duty, had been for a considerable time in a state of decay, and had become unsafe. It also tends to show that the defendants knew, or by the exercise of reasonable diligence would have known, what its condition was, for they had the means of making as thorough an examination as could be necessary to learn its condition, not merely by observing its surface, but by going under it and examining the foundations on which it rested, as well as the extent of the decay. And if they were negligent in allowing it to become rotten or dangerous, or in not making themselves acquainted with its condition, so far as they could do so by reasonable diligence, they had made themselves liable to any of their servants who should be injured by the defect unless he also was negligent." (28)

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(26) Sweeny v. Old Colony & Newport R., 10 Allen 368; Elliot v. Pray, 10 Allen 378; Zoebish v. Tarbell, 10 Allen 385; Combs v. New Bedford Cordage Co., 102 Mass. 572, 584; Huddleston v. Lowell Machine Co., 106 Mass. 282, 285; Brossman v. Lehigh Valley R., 113 Pa. 490.

(27) Illinois Central R. v. Welch, 52 Ill. 183.

(28) Huddleton v. Lowell Machine Shop, 106 Mass. 282.

In another case a servant was declared not to have assumed a risk the danger of which he had no reasonable opportunity to find out. (29) Thus, if machinery of an unusual and more dangerous character is produced, and the employe has no notice of the danger, he does not assume the risk attendant upon its use. (30) When, therefore, an accident happens from such a cause the question is, Did the employe know of the danger or would he have known of it by exercising ordinary care? In the following cases it was held that he had not the necessary facilities for obtaining a knowledge of the peril to which he was exposed to have enabled him to avoid it, and he was chargeable with no want of due care. (31)

9. Furthermore, if the place becomes defective in any way, less secure or more dangerous to the workman, and he does not know this and continues his employment, his employer is liable for the consequences. (32)

In such cases it would be unreasonable to suppose that an employe would assume them; indeed, in one sense, it would be impossible for him to assume risks of which he had no knowledge. (33) The courts, therefore, have declared with essential unanimity that "where an employer knows the danger to which his servant will be exposed in the performanec of any labor to which he assigns him, and does not give him sufficient and reasonable notice thereof, its dangers not being obvious, and the servant, without negligence on his own part, though inexperienced, or through reliance on the directions given, fails to perceive or understand the risk, and is injured, the employer is responsible. The dangers of a particular position or mode of doing work are often apparent to a person of capacity or knowledge of the subject, while others, from youth, inexperience, or want of capacity, may fail to appreciate them; and a servant, even with his own consent, is not to be exposed to such dangers, unless with instructions and cautions sufficient to enable him to comprehend them, and to do his work safely with proper care on his own part. But the servant assumes the dangers of the employment to which he voluntarily and intelligently consents, and, while ordinarily he is to be subjected only to the hazards incident to his employment, if he knows that proper precautions have been neglected, and still knowingly consents to incur the risk to which he will be exposed thereby, his assent dispenses with the duty of the master to take such precautions." (34) The inquiry, therefore, takes this form, Did the employe know of the defect? If he did, he cannot recover. (35) Though not knowing, would he have known had he exercised ordinary care? If so, he cannot recover, nor is forgetfulness of the danger usually any excuse. In some cases, though, it is held that if he was so absorbed by his work while doing his duty as to forget the danger he may perhaps recover. (36)

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(29) McCormick Harvesting Machine Co. v. Burandt, 136 Ill. 170, 177.

(30) Pennsylvania Co. v. Whitcomb, 111 Ind. 221; Baltimore & Ohio R. v. Rowan, 104 Ind. 88.

(31) Chicago R. v. Shannon, 43 Ill. 339; Chicago R. v. Swett, 45 Ill. 197; Toledo R. v. Fredericks, 71 Ill. 294; Toledo R. v. Ingraham, 77 Ill. 309.

(32) Huddleston v. Lowell Machine Shop, 106 Mass. 282; Fifield v. Northern R., 42 N. Hamp. 225.

(33) Davidson v. Cornell, 132 N. Y. 228, 235; Smith v. Car Works, 60 Mich. 506; Fox. v. Peninsular Car Works, 84 Mich, 676; Behm v. Armour, 58 Wis. 1; Naylor v. Railway Co., 53 Wis. 661; Bexxes v. Railway Co., 45 Wis. 477; Strahlendorf v. Rosenthal, 30 Wis. 674; Pennsylvania Co. v. Whitcomb, 111 Ind. 212; Baltimore & Ohio R. v. ....; Central R. v. Rowan, 104 Ind., 88; McCormick Harvesting Machine Co. v. Burandt, 136 Ill. 170; Swaboda v. Ward, 40 Mich. 420.

10. There is another distinction between fixed risks and changing risks that must be noticed. A railroad switch or frog is an example of the first kind, a bush overhanging a track the other. An employe may assume the former risk because it is known, while he may still hold his employer for any injury growing out of the latter. "The distinguishing principle," says Judge Gilbert, "between these two classes of cases is that in the one the defects are visible and apparent, and the dangers therefrom are presumed to be known and assumed, while in the other the dangr is not seen, and no such presumption arises. The condition of the switches and frogs, the degree of the curvature of the track are all fixed conditions, which are visible to the eye. The experienced employe knows that he is to serve the railroad company with its roads and cars in the condition in which he sees them, and he knows the danger that may attend such service. But he does not necessarily know, and he cannot be expected to meet, dangers which arise from changes in those conditions, however apparent may be the causes which produce them. He is not presumed to know that the rains and floods will have covered the track with earth and sand at a place where common prudence would require that provision be made against the occurrence of such an obstruction. He is not required to assume that ice and snow will be allowed negligently to accumulate upon the track and switches, or that other obstructions will be placed on or above the same, so as to render the track unsafe, or his work more dangerous than it otherwise would be." (37)

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(34) Leary v. Boston & Albany R., 139 Mass. 580, 584, citing Sullivan v. India Mfg. Co., 113 Mass. 396; Coombs v. New Bedford Cordage Co., 102 Mass. 572.

(35) Baltimore & Ohio R. v. Strickler, 51 Md. 70; Wells v. R. Co., 56 Iowa 525; Brossman v. Lehigh Valley R., 113 Pa. 490; Bengston v. Railroad Co., 47 Minn. 486; Wallace v. Central Vt. R., 63 Hun 632; Haley v. Jump River Lumber Co., 81 Wis. 412.

(36) Hannah v. Conn. River R., 154 Mass. 529. See Kane v. Railway Co., 128 U. S. 94.

(37) Oregon Short Line v. Tracy, 66 Fed. 931, 935.

11. "If the defects in the machinery or other appliances are as well known to the employed as to the employer, the former must be regarded as voluntarily incurring the risk resulting from its use, unless the employer, by urging on the servant or coercing him into danger, or in some other way, directly contributes to the injury." (38) What, then, is left of the rule requiring suitable appliances, etc.? If they are furnished, the employer's duty is fulfilled and an injury to his servant is without redress. If they are not furnished, he is not responsible if his employes knew or ought to have known of their imperfect character. But if they are unsuitable, and they did not know, or could not have known by ordinary observation, then their employer is liable. Thus, this principle relieves the employer wholly from all responsibility for the condition of his machinery, from boxing it or guarding it in any manner; it relieves him from employing men to warn of danger, unless his duty to do these things have been re-imposed on him by statute. The fragment of responsibility still remaining is to make known dangers to employes unless they know them, or are such as may be known by ordinary observation. If they are, then the employe assumes them and the employer is relieved of all liability. (39)

This, therefore, is one of the fragments still left of the fundamental rule. If the employer knows of defects or imperfections that are unknown to his employe or would not be by ordinary observation, the employer is liable for the consequences that may happen to his employe from working in ignorance of the dangers surrounding him.

It will be seen, however, that the question is always open in every case in which the danger was not known, Ought the employe to have known it? This is a question of fact, and the decision in one case throws no light on another. If the rule was limited to actual knowledge, an employe would have a great advantage over his employer. By proving the injury and his ignorance of the danger his case would be made out. If this were the rule, we fear that the reign of ignorance would rapidly increase. On the other hand, by permitting the employer to prove that his employe ought to have known of the danger, the case is thrown into the shade of uncertainty. This modification, as will be seen, makes shipwreck of the rule requiring employers to furnish suitable appliances, places and servants, so far as employes know or ought to have known of their true condition. An employer is left quite free to use a defective machine, which cannot be run without danger, so long as the employe knows, or ought to know its true character. The little qualification concerning defects, the dangerousness of which the employe does not fully comprehend does not take the edge off the modification, and it still affords shelter for the employer in numberless cases in which he would otherwise be held liable for transgressing the fundamental rule of duty.

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(38) Gibson v. Erie R., 63 N. Y. 449, 453; Laning v. New York Central R., 49 N. Y. 521.

(39) Gilbert v. Guild, 144 Mass. 601.

Again, it cannot be questioned that this overthrow of the former rule requiring employers to furnish suitable appliances, etc., is a violent break in the general law of negligence. The fundamental principle of the law is, if one is injured through the negligence of another, the offending party must make the other's loss good. But an employer may be negligent, may run a machine which he knows is imperfect and dangerous, and if his employe knows it he assumes the consequences. Thus, the law imposes no checks on his negligence. The consequence is, the law promotes negligence instead of checking it, which it could easily do by making the employer liable therefor. Numberless things are done by employers that would not be done if the law visited on them the consequences of their conduct.

We must not forget, however, to look on the other side. If an employer is often negligent in using machinery which he knows is defective and dangerous, the employe is just as negligent when he operates it, knowing its real condition. There is no great merit in his contention in many, if not all, of such cases, because he too is a participant in the wrong-doing by using the defective thing. Only in those cases in which the employer knows and the employe does not know has the latter a clear case for redress.

12. This modification of the most general rule of employment is not limited to ordinary labor. It has been applied more widely. Therefore, if "a person specially undertake to perform a peculiarly perilous work, by operating a machine obviously wanting in suitable appliances for safety, knowingly and voluntarily, he cannot afterwards complain, in case of injury, in consequence thereof, that the machinery was of a dangerous kind, and that it was wanting in appliances reasonably necessary to render it safe." More briefly expressed, an employe cannot recover for an injury caused by voluntarily assuming a known risk. No matter how defective the appliances may be, or hazardous the place of employment, or incompetent his fellow-laborers, if one undertakes employment with his eyes wide open, knowing these things, he takes the risks and can recover nothing in the event of injury. (40)

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(40) Pennsylvania: Rummell v. Dilworth, 111 Pa. 343, 349; Green & Coates Sts. Pass. R. v. Bresmer, 97 Pa. 103; Marsden v. Haigh & Co., Brossman v. Lehigh Valley R., 113 Pa. 490; McCombs v. Railroad, 130 Pa. 182; Payne v. Reese, 100 Pa. 301.

Rhode Island: Gaffney v. New York R., 15 R. I. 456; Kelley v. Silver Spring Co., 12 R. I. 112; McGrath v. New York R., 14 R. I. 357, and 15 R. I. 95.

13. We ought not to close this chapter without re-stating an important principle still binding employers. Though they may furnish defective appliances, incompetent employes, and the like and be free from responsibility to those who know what has been done, this rule does not apply to other employes who are working in ignorance of these matters. With respect to those who know, "the master," says the court in one of the most recent cases, "who has furnished a place to work in, free from non-obvious or latent danger, or has instructed his servant, upon entering his service, expressly as to these, if they exist, has used the due care which the law prescribes as his duty in the premises." (41) The master's liability to them under these conditions are the same as though he had furnished safe appliances, places for work, etc., in the beginning. But this rule applies only to those who know or ought to know of the true character of the appliances, etc., and to those who are ignorant, without any fault on their part, the master is still liable. Thus, an employer may have an unsafe boiler on his premises, and the engineer, knowing of its condition, may assume the risk and, if injured by an explosion, be unable to recover anything. But suppose an employe a little way off, who knew nothing about the defective boiler, is injured? The employer must respond to him, and he must do so even though the engineer was neglectful. In other words, as the master has not observed the rule to furnish a safe boiler, he is liable for the consequences to any employe who did not know this even though the engineer was neglectful on his part. His neglect furnishes no excuse for the master. Says Justice Danforth, speaking for the New York Court of Appeals: "It is no doubt settled in this state that an employe of a railroad company takes the natural risks of his employment, and, among others, the risk of injury resulting from the negligence of his fellow-servants. This rule, however, has no application if the company has at the same time disregarded its obligation to provide either a suitable road-bed or engines, cars, or other necessary appointments of the railroad, so that the injury is not entirely caused by the negligence of the other fellow-servant, but in part at least is the result of that omission of duty.

Massachusetts: Moulton v. Gage, 138 Mass. 390; Williams v. Churchill, 137 Mass. 243; Lovejoy v. Boston & Lowell R., 152 Mass. 79; Gilbert v. Guild, 144 Mass. 601; Russell v. Tillotson, 140 Mass. 201; Sullivan v. India Mfg. Co., 113 Mass. 398; Coombs v. New Bedford Cordage Co., 102 Mass. 572, 585; Ladd v. New Bedford R., 119 Mass. 412; Osborne v. Morgan, 130 Mass. 102; Leary v. Boston & Albany R., 139 Mass. 580; Taylor v. Carew Mfg. Co., 140 Mass. 150; Linch v. Segamore Mfg. Co., 143 Mass. 206; Hatt v. Nay, 144 Mass. 186.

(41) Bethlehem Iron Co. v. Weiss, 40 U. S. Ct. of App. 270, 275.

In such a case the negligence of the co-servant will not exonerate the company from the consequences of its own default." (42)

In another case a train broke apart in consequence of having a defective brake and the conductor was killed by a collision resulting therefrom. The company tried to shield itself from liability to the representatives of the conductor behind the negligence of the brakeman in using the brake, the condition of which it was contended he had discovered several hours before. Said the court: "Very likely this is true, but it does not affect the liability of the master, nor bring the case within the rule exempting the latter from responsibility for the negligence of a fellow-servant. The master who is bound to provide safe machinery for the use of his servants is not relieved from responsibility to an employe for a neglect of that duty by the fact that a fellow-servant may have been guilty of negligence in using unsafe apparatus which was committed to him to use. (43) The question would have been a very different one had the brakeman, if injured, tried to recover of the company. He would have failed because he know of the condition of the brake and assumed the risk."

One other case may be cited, of an injury to a saw-mill worker from a defective machine, with which he had nothing to do. Said the court: "If the saw-mill company by its neglect has unnecessarily increased the danger attendant upon the use of the machine, it is liable for an injury to an employe who is not himself guilty of negligence, resulting from the use of such imperfect and dangerous machine; and it is no excuse for the company that some one of its employes was careless in the use of such dangerous machine, and that if it had been carefully handled the accident would not have occurred." (44)

This doctrine has been very forcibly stated by President Judge Lewis: "The servant, moreover, although he assumes the ordinary risks of the business, including the negligence of fellow-servants, does not contract against the combined negligence of a fellow-servant and his employer." (45)

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(42) Ellis v. New York Central R., 95 N. Y. 552; Grand Trunk R. v. Cummings, 106 U. S. 700; Towns v. Vicksburg R., 37 Lea. Ann. 630; Farren v. Sellers & Co., 39 La. Ann. 1011.

(43) Ransier v. Minneapolis R., 32 Minn. 331; Cone v. Delaware R., 81 N. Y., 206; Booth v. Boston & Albany R., 73 N. Y. 38.

(44) Richmond & Danville R. v. George, 88 Va., 328; Sherman v. Menominee River Lumber Co., 72 Wis. 122, 127. The court cited Cayzer v. Taylor, 10 Gray 274; Avilla v. Nash, 117 Mass. 318; Paulmier v. Erie R., 34 N. J. Law 155; Booth v. Boston & Albany R., 15 Hun. 172; Railroad v. Henderson, 37 Ohio St. 599; Boyce v. Fitzpatrick, 80 Ind. 526; Grand Trunk R. v. Cummings, 106 U. S. 700; McMahon v. Henning, 1 McCrary 516; Papworth v. Milwaukee, 64 Wis. 389, 402; Stetler v. Chicago R., 46 Wis. 497, 510; Schultz v. Chicago R., 48 Wis. 375, 381.

14. A negligent act cannot be excused because it is customary, but proof of custom is evidence, although not conclusive, that the act is not negligent. (46)

15. When a person is injured by a defect and he sues to recover for an injury sustained, is the inquiry simply one of fact to ascertain whether the defect was obvious or not? In some states liability is made to turn on this inquiry, was the defect obvious; if it was, the employe knew it, or ought to have known it, and the employer is not liable. The more general rule is, had the master the right to assume the employe would know it because it was plainly visible. (47)

CHAPTER VI.

SPECIAL RULES RELATING TO THE ASSUMPTION OF RISKS.

1. We will not proceed to consider the rules applying to particular kinds of risks. In these there are often two questions: first was the employe injured by a natural risk, the consequences of which he assued; secondly, if the risk was not of this character, did he know of its existence and assume it? As the consequences to him are the same in both cases, we propose to treat both classes of cases together.

2. As far more mishaps occur in the building, repair and operation of railroads than in any other form of human activity, let us begin with the special rules that have been worked out and applied to these accidents. Of these, low overhead bridges have been a sadly fruitful cause of accidents and litigation. In the states like New Jersey and Maryland, where the building of them is regarded as proper and not negligence, there is little occasion for legal controversy arising from their use, but in most states such structures are deemed the creations of negligence and the railroads, therefore, may be held responsible under some circumstances for having them. Elsewhere we have shown what principles apply to this class of cases and seemingly hardly any other questions now remain to puzzle the courts except those of fact relating to such accidents. The principal questions usually are, was the in-

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(45) Richmond & Danville R. v. George, 88 Va. 328; Faren v. Sellers & Co., 39 La. Ann. 1011.

(46) Flanders v. Chicago R., 51 Minn. 193, 197; Kelly v. Southern Minn. R., 28 Minn. 98; Kolsti v. Minneapolis R., 32 Minn. 133; Doyle v. St. Paul R., 42 Minn. 79; O'Malley v. St. Paul R., 43 Minn. 289; Larson v. St. Paul R., 43 Minn. 423.

(47) Nadau v. White River Lumber Co., 17 Wis. 130; Dorsey v. Construction Co., 42 Wis. 583; Stephenson v. Duncan, 73 Wis. 404; Sweet v. Coal Co., 78 Wis. 127.

jured employe duly notified of the existence of the dangerous structure, or did he previously know, so that no warning was required? In one of the latest cases before the United States Circuit Court of Appeals, the company was deemed not liable for the death of a brakeman caused in this manner because he had been duly warned of the danger. Judge Caldwell entered a vigorous dissent: "The employe," he said, "takes all the risks incident to the business, whatever it may be, where that business is conducted in a reasonably careful and prudent manner, and with due regard to the safety of the employes. Dangers which needlessly imperil human life, and which can be removed at little cost, are not dangers necessarily incident to the operation of a railroad, but are dangers which it is the duty of the railroad to remove. Common humanity demands this. Moreover, the state has an interest in the lives of her citizens, and will not permit an employer needlessly to imperil the lives of his employes. The very highest consideration of public policy demands an enforcement of this rule. And the peril is unnecessary and needless where, as in this case, it can be removed at slight expense. Notice of the unnecessary peril in such cases goes for nothing." (48)

3. Another long series of accidents have arisen from the placing of buildings, posts, telegraph poles, cattle-chutes, awnings and other structures so close to the sides or tops of the trains as to endanger the lives of those who operate them. The rules that apply to them are quite similar to the rules that are applied to overhead bridges.

The first rule that may be stated is the Massachusetts rule, that and structures which are needful for the prosecution of the general business may be erected so near the tracks as to endanger the lives of the operatives of the trains, nor is the company required to give any notice of their existence. This is the extreme rule, and, happily, is so contrary to the rule perhaps in every other state, that it ought to be exactly stated. Using, therefore, the words of Justice Holmes: "It is necessary for railroad companies to put up structures near enough to their tracks for it to be possible for persons on the trains to come in contact with them. Parallel tracks usually must be laid near enough to each other to create a similar danger between trains moving in opposite directions. A company is not bound to give warning of every such structure to every person employed·upon its trains." (49)

The second rule may be called the New York rule, which is simply the application of a very familiar one that a railroad company may use such appliances, machinery as are in common use, even though these may not be safe." This was applied to a mail crane—an appliance to facilitate the taking into a mail car of mail bags when the car is in motion. An employe having been injured by it, he sought to show that the company was negligent in placing it so near the track. "There was no evidence," said the court, "that the crane in question was placed nearer the track than cranes upon other roads, nor that it was practicable to place a crane at a greater distance than was the one in question, or to construct it with a shorter arm and have it answer the purpose in view. The injured employe took the risk of all constructions necessary and reasonably adapted to the business of the railroad. The burden was upon him to show that the appliance, concededly useful in the business of the defendant, was improperly constructed or located, and this he wholly failed to do. Proof that it was dangerous was not enough. He was bound to go further and show that the defendant might, by the use of reasonable care, have accomplished its purpose and at the same time protected its employes from the danger." (50 This device, though dangerous from its location, was in common use and, therefore, the employes were supposed to know of them. The court does not intimate that if there had been only one, or a single object obstructing the way, or irregular objects, that it would not have been its duty to notify its employes of their existence. The Massachusetts rule contains no such limitation, nor does it exist, for in the case wherein the rule was applied an employe was injured by a post of which he had no knowledge.

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(48) Myers v. Chicago & St. Paul R., 94 Fed. 406.

(49) Thain v. Old Colony R., 161 Mass. 353.

The third rule is very different. By this a railroad must place its signal posts and structures at a reasonably safe distance from its tracks, so far as not to be dangerous to brakemen and other operatives on the trains; or to warn them of such dangers if they exist. (51) It is negligence to place them so near as to endanger the lives of employes, and, consequently, it is an imperative duty to warm them of the danger. Thus, it was said of a railroad company that permitted a telegraph pole to stand for three years within eighteen inches of passing cars that it was "culpable negligence." Consequently, the representative of a brakeman who knew nothing of its existence, and was killed by coming in contact with it, had a good claim against the company. (52) Likewise the Supreme Court of Michigan has declared that the constructing and maintaining of a side track by a railroad company so near to a building as to endanger the lives of their employes, was a clear violation of its duty to provide them with a safe place to conduct their employment. (53) To pile lumber dangerously near a track is a negligent

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(50) Sisco v. Lehigh R., 145 N. Y. 296, 300, 301.

(54) Johnson v. St. Paul Co., 43 Minn. 53.

(52) Chicago & Iowa R. v. Russell, 91 Ill. 298.

(53) Sweet v. Michigan Central R., 87 Mich. 559.

act of the same character. Said the Supreme Court of Wisconsin, in a case in which this was done: "It is as much the duty of the railroad company to keep its track in proper repair, as it is to keep its machinery, engines and cars in such repair; and any neglect to keep them in such repair, or permitting the same to be obstructed in such manner as to increase unnecessarily the danger to its employes is negligence for which the company may be responsible in case of an injury happening to an employe by reason of such want of repair or obstruction." (54)

One other principle may be mentioned. It is negligence for a railroad to permit any posts or other obstructions to remain dangerously near the track which are not required for the ordinary operations of the company, for example, posts set up by a station agent for a domestic purpose. In a case of this nature the Supreme Court of Iowa remarked: "These posts were in no manner connected with the use of the road and plaintiff was not required to direct his attention to the discovery of dangers caused by impediments and structures in no way required in the operation of the road. He was authorized to presume that no such obstructions were in his way, and he cannot be charged with negligence in failing to discover them." (55)

4. Next may be considered the tracks. Several important principles have been established. First, an employe at work on a construction train to haul material over an incomplete track in the manner customary in the construction of railroads assumes the risk incident to such employment and cannot recover for an injury caused by a derailment at a place which is not different from the other parts of the track. (56) In other words, when a road is in process of construction it is not an appliance; and the same rule applies to men who are at work thereon as applies to men who are building a house. Furthermore, men who are repairing a road are governed by the same principle. (57)

The same rule applies to a defective track on which they are at work. They know it is defective, that is the very reason why they are there, and they assume the risk of the situation. (58) Says Justice Long: (59) "As a general rule it is the duty of a railway company to furnish its employes a safe place to work while operating its train; yet the rule must be considered with some qualifications when a new road is being built. The employe cannot complain of the imperfect condition of a road he is employed to assist in making perfect. He assumes greater risks upon such road than upon a completed one, where he might expect that the track was clear and all obstructions removed." As was said in Carbon v. Railway Co., (60) "where a servant is employed to put a thing in a safe and suitable condition for use, it would be unreasonable and inconsistent to require the master to have it in safe condition and good repair for the purpose of such employment."

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(54) Bessex v. Chicago R., 45 Wis. 477, 482.

(55) Kearns v. Chicago R., 66 Iowa 599, 601.

(56) Evansville & Richmond R. v. Henderson, 142 Ind. 596.

(57) Id; Lindvall v. Woods, 41 Minn. 212. But see Meloy v. Chicago & Northern R., 77 Iowa 744.

(58) Brick v. Rochester R., 98 N. Y. 211; Manning v. Chicago R., 63 N. W. 312 (Mich.)

(59) Manning v. Chicago R., 63 N. W. 312.

An employe who is employed by a railway to assist in clearing an obstructed track assumes the risk of washed-out bridges and tracks when there are caused by unusual storms which could not have been anticipated, but he does not assume this risk when the danger might have been discovered and averted by reasonable diligence and proper care. Said the Supreme Court of Oregon of a man thus employed by a railroad company: "It may be admitted that if the performance of his duties had required that he should ride over the track from place to place, where his services were needed to clear the track of obstructions, the risk assumed included the danger of bridges being undermined or swept out by freshets or floods, when they occurred from inevitable accident, but not when the danger might have been ascertained and averted in time to avoid the injury by the exercise of reasonable care and proper precautions." (61)

In assigning men to their places of work, the building or repair of a road, or other purpose, two rules apply. If the road over which they are to go is completed, it is regarded as an appliance, and the same rule that ordinarily applies to the furnishing of safe appliaces applies in such cases. It must be suitable for the purpose. (62)

"When the injury results to a servant on account of defective construction, the law does not consider that in entering the service he assumed the risks incident to the defective construction. "On the contrary the company are required to furnish a road-bed properly constructed and properly equipped with sound machinery and apparatus, and the right of way so clear as to reasonably prevent danger from falling timber." (63) But a somewhat different rule applies to a road over which they go that is just finished, or hardly so, the nature of which they understand. The rule that applies in such a case has been well expressed by Justice Elliott, of the Supreme Court of Colorado: "The injured employe could not reasonably expect the road and the road-bed of the defendant company to be in as perfect and safe condition before it was finished as if the same had been completed and opened for public travel. Defendant was required to exercise only reasonable care considering the circumstances and condition of its road to provide for the safety of the plaintiff while riding thereon." And, again, "It was the duty of the defendant company to employ a competent engineer or other skilled person to see to it that the road was reasonably safe for the transportation of its workman—not necessarily as safe as a road fully completed and equipped for the carriage of passengers, but as safe as the circumstances of the case would reasonably allow." (64) The remarks of the Supreme Court of Texas are worth adding: "That there must of necessity be a time in the constructing of a railroad when its track is not perfectly safe, we think a proposition that does not admit of doubt. The employes operating a train at such time must be presumed to have assumed the additional risk incident to that state of affairs. But we cannot assent to the doctrine that when a portion of a road is completed and is being operated for construction purposes only, the company is not bound to use all reasonable care in putting it into such condition that its employes, engaged in running trains over it, may use it with safety to themselves and their co-employes." (65)

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(60) 28 Pacific 497.

(61) Conlon v. Oregon Short Line, 23 Or. 499, 503.

(62) Brick v. New York & Portchester R., 98 N. Y. 211; Walling v. Construction Co., 41 S. Car. 388.

(63) Texarkana R. v. Vallie, 60 Texas 481.

"With respect to side-tracks, employes may be chargeable with knowledge that they are not always perfect; that they are sometimes constructed over ditches and gullies and are not always ballasted with the same care that main tracks usually are, but railroad companies owe it to their employes to protect them from unnecessary and dangerous pitfalls and unusual conditions." (66)

5. There have been many accidents from the use of switches and frogs, though the legal principles springing from them have not been very important. One of the questions that has most perplexed the judicial mind is whether a frog, or the space between the main rail and the guard rail, ought to be blocked. If it ought to be, then an unblocked frog is an unsuitable appliance and a company is negligent in using it. In discussing this question the Supreme Court of Minnesota has remarked: "Such places unprotected are places of very great danger, especially to men employed in coupling or uncoupling cars, and it is the duty of a railroad company to guard its employes against the danger if there be reasonably practical means for doing so known to it, or which, in the use of proper diligence, intelligence and care may be known to it; and the evidence for the plaintiff clearly indicates devices which the jury might find to have

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(64) Colorado Midland R. v. O'Brien, 16 Col. 219.

(65) Gulf R. v. Redecker, 67 Texas 181, 187.

(66) McGrath, J., Ragon v. Toledo R., 91 Mich. 379, 381; Ragon v. Toledo R., 97 Mich. 265.

been practicable and reasonably adequate and inexpensive, and known, or which ought to have been known to defendants, and which, as to this particular frog, it had omitted." (67) A blocked frog, therefore, is an unsuitable or defective appliance. This, however, is not the rule everywhere.

6. Again, if all the blocking of frogs on a track is uniform except one, and this is defective in construction, an employe cannot be regarded as having assumed the risk of it without having actual knowledge of its condition. (68) But if an employe undertakes his employment knowing the condition of its switches and frogs, then he falls under the general rule and assumes the risks. And in almost all cases the facts have shown that he did know of their condition. The Supreme Court of Arkansas has summarized the law on this subject. "The plaintiff charges negligence in the use of unblocked frogs, not because they were badly constructed, and out of repair or exposed operatives to latent dangers, but because a different kind of frog would have been less dangerous to operatives. Unblocked frogs were in universal use on the roads in this State, including the entire road of the defendant. The injured employe knew, when he entered the defendant's service, that its frogs were unblocked; and if there was danger in their use, he knew it was an incident to the service he was entering. When a master employs a servant to do a particular work with a particular kind of implement or machine, he agrees that they are sound and fit for the purpose intended so far as ordinary care and prudence can discover, but does not agree that they are free from danger in their use. The servant agrees to use in the service the particular kind of implement or machine; and if under such circumstances harm comes to him, it must be ranked among the risks he assumed when he entered the service." (69) Such is the express holding of the courts in several states in which the negligence charged was in the use of unblocked frogs.

7. Besides providing suitable cars, they should be properly loaded. The duties of a company in this regard have been differently defined. In some states the car inspector is required to inspect the load on a car as well as the car itself. Wherever he is regarded as acting for or representing his employer, his employer is responsible for his negligence, for he is not a fellow-servant with the other employes operating trains. (70)

In some states those who load cars are regarded as fellow-servants with engineers, brakemen and others who operate them; in other states, the work of loading them is that of the employe, and the master has no special responsibility therefor. This is the rule in Indiana. Says the court: "One who loads the cars of a railroad company is, while so engaged, a fellow-servant with the brakeman who goes upon the train in which such loaded cars are afterwards placed, and it makes no difference what official designation of agency may be applied to him. Courts know judicially that loading railroad iron on flat cars pertains to the service of an employe. This is so because a railroad corporation must of necessity employ servants to load its cars. To say that the servant who loaded the cars was always the chief agent and officer of the railroad company, without more, would in no manner change the situation. Regardless of his agency or office in other respects, if he was also properly engaged in loading cars, he was at that time a fellow-servant with all others in like service." (71)

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(67) Sherman v. Chicago R., 34 Minn. 259.

(68) Paine v. Eastern R., 91 Wis. 340.

(69) Railway Co. v. Davis, 54 Ark. 389, 393.

(70) Atchison R. v. Seeley, 54 Kan. 21.

In New York the law requires a railroad to adopt reasonable rules for loading, with the double purpose of protecting its employes and the public. (72) Not to do this is negligence. Furthermore, to project timber or rails beyond the ends of cars, thereby greatly increasing the hazard to brakemen, is negligence. (73) But if a brakeman sees the danger and yet ventures to perform his duty does he not assume the risk, as in so many other cases? In Minnesota, however, the question was left to the jury whether a company was not negligent in hauling a car in that condition, and the jury returned a verdict against the company; furthermore, as it was shown to their satisfaction that the brakeman was not negligent himself in trying to make a coupling with another car, whereby he lost his life, the company was held liable. (74)

Clearly, if a brakeman does not know of a condition of a car thus loaded he is not negligent in attempting to perform his duty. Furthermore, he often has only a very short time to find out how a car is loaded. In such cases he cannot be charged with negligence. But when he does know of the danger, and attempts to make a coupling under such conditions, what then? It is said that he should desist from the effort, or employ some method of avoiding the danger. Should he, knowing the danger, voluntarily incur it, he would also be regarded as guilty of contributory negligence and, consequently, have no cause of action aganist the company. (75) It is not easy to reconcile the decision of the Minnesota case with this rule. Ought not the brakeman in that case, knowing as he did of the peril, to have desisted?

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(71) Indianapolis R .v. Johnson, 102 Ind. 352, 355.

(72) Ford v. Lake Shore R., 124 N. Y. 493.

(73) Corbin v. Winona R., 66 N. W. 271 (Minn., 1896); Northern Pacific R. v. Everett, 14 U. S. Supp. Rep. 474.

(74) Id.

(75) Northern Pacific R. v. Everett, 14 U. S. Sup. Ct. Rep. 474.

8. Next may be considered the subject of brakes, which has been a fruitful source of litigation. We need not repeat the rule, that an employer must furnish safe appliances to an employe, and that when one is employed as a brakeman this means bumpers as well as brakes. (76)

How far must a brakeman exercise the duty of inspection? Some employes have a positive requirement on the subject; others have not. Where no positive rule exists the law does not require an inspection to be made. Says the Supreme Court of Kentucky: "A brakeman is never entrusted with the duty of inspecting, and, therefore, cannot be reasonably expected or required to know whether all the machinery and appliances of a railroad train are in proper condition." (77)

"A brakeman,' says Justice Day, "although he may have the means and opportunity of doing so, is not required to go around and under the track with a lantern and hammer for the purpose of ascertaining whether there be any flaw or crack in a wheel or axle. The company employs parties to perform this duty, and the brakeman has the right to suppose that they will perform it properly, and he is justified in leaving the performance of it to them. At the same time he must make a reasonable use of his senses and if a defect is apparent and patent, and would have been discovered by the exercise of reasonable and ordinary care, in view of the position which the brakeman occupies, the law conclusively presumes that he possesses the knowledge which reasonable attention would furnish." (78)

Where a positive rule exists, employes must regard it, and if they do not, are negligent. But this rule can hardly apply to those cases in which brakemen have not time to make an inspection. It evidently means that, where brakemen have a reasonable opportunity, they must employ it in inspecting the brakes committed to their charge. In many cases, however, they are obliged to act very promptly and have no time to make inspections. One of these cases was the Philadelphia and Reading R. v. Huber. (79) The brakeman had but two or three minutes to ascertain the condition of the brake; indeed, not even that, for during this time he was occupied in uncoupling cars and calculating and regulating their movements. Consequently the company could not shift the consequences of using the brake, which was defective and dangerous, and had been permitted to remain so. Had the brakeman actually known of this condition, he might have been responsible for using it; but, as he did not know, he could not be charged with negligence in not finding out its condition during the short period of time in which he could act.

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(76) Evans v. Chamberlain, 40 S. Car. 104.

(77) Louisville R. v. Foley, 84 Ky. 220.

(78) Way v. Illinois Central Co., 40 Iowa 341, 343; Muldowney v. Illinois Central R., 36 Iowa 462, s. c. 39 Iowa 615.

(79) 128 Pa. 63.

When, however, he does know of the defects or imperfections or they are obvious, then he assumes the risks attending their use. Thus, if one car is higher than another, it is obvious that they cannot be united with a straight coupling, and for a brakeman to attempt to do this clearly is negligence. There are many cases of this character. (80)

When a brakeman is injured by a defect or imperfection not in the coupling or other appliance which is more especially within his vision, but by a defect in the track, a hole, for example, then a different principle applies. If he has been notified of the particular defect, then doubtless he must govern himself accordingly, but if he is notified that the track generally is in bad condition, he may hold the company liable for an injury caused by its unfit and unsafe condition of which he had no knowledge. A case of this kind arose in Missouri, and the court remarked that if the master did not know of the defect and reasonable care on his part would not have disclosed it, he would not be liable. If, however, by the exercise of reasonable care the employer could have discovered the defect, he would be liable even though a like exercise of care on the part of the employe would also have led to its discovery. "The servant has a right to assume that the machinery or implements furnished him by the employer are safe and suitable for the business; and he is not, while the master is, required to examine them for that purpose. The master is chargeable with knowledge which he might have acquired by the exercise of due care the same as if he actually possessed it, whereas the servant has the right to assume that all necessary examinations have been made by the master, and is not required, either in person or by another employed by him for that purpose, to examine the machinery as to its fitness and sufficiency." (81)

9. From accidents on railroads we may pass to accidents from the use of machinery in mills and other places. Many of these have happened to young and inexperienced employes from the lack of safeguards. In all such cases the rule is plain; it is the duty of the employer to instruct his employes properly about all the dangers

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(80) Norfolk & Western R. v. Emmert, 83 Va. 640; Brewer v. Flint & Pere Marquette R., 56 Mich. 620; Fort Wayne R. v. Gildersleeve, 33 Mich. 133; Way v. Illinois Central R., 40 Iowa 340; Muldowney v. Illinois Central R., 39 Iowa 615; Rains v. St. Louis R., 71 Mo. 164.

(81) Henry, J., Porter v. Hannibal & St. Joseph R., 71 Mo. 66, 79.

attending its use. This has been applied again and again. The question in these cases is, has the instruction either been given by the employer, or has the employe learned in any other way sufficiently in the performance of his task. If he has become informed his employer is not liable; otherwise he is negligent and responsible therefor. (82)

"If the servant," says Justice Lord, "is acquainted with the dangers, and fully understands the risks to which he is exposed, where the place prepared for him to work is near or about machinery which is not boxed or covered, and consents or chooses to contract to do it, then he assumes such risks, and the master is under no obligation to indemnify him against the consequences of the .... Having consented or contracted to work in a place or position in which he was exposed to the machinery, he will be held to have understood the hazard attending his employment, and to have voluntarily taken upon himself the consequences of such hazard. In all such cases the contract, although involving dangerous service, has been voluntarily entered into with full knowledge or sufficient negligence to comprehend the hazards or risks to be incurred in the employment, and the servant can have no just ground of complaint against the master for damages resulting from that service.

"But, on the other hand, if the servant is ignorant or inexperienced, and does not know or understand the risks incident to his employment, and to which he would be exposed, and an injury happens to him without any negligence on his part, and without the master warning or pointing out the dangers, he would be guilty of a breach of duty and liable to the servant for the injury he sustained. The distinction rests upon the knowledge of the servant in the one case and the want of it in the other.

"If, therefore, the service required to be performed is dangerous, or rendered so by reason of the master's failure to provide a place where the servant may do his work with safety, but which, by the exercise of due care and reasonable expense on the part of the master, might have been made safe, his omission would be a breach of duty, ānd render him liable for any injury arising therefrom, unless the servant has knowledge of and comprehends the nature or extent of the risks to which he is exposed at the place provided and thereby dispenses with the performance of this duty on the part of the master; or, unless the master, where the servant is ignorant or inexperienced, points out, or gives him full notice of the risks attending such service at the place to be performed and thereby enable him to appreciate such risks and to avoid them." (83)

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(82) Coombs v. New Bedford Cordage Co., 102 Mass. 572; Laning v. New York Central R., 49 N. Y. 521; Hill v. Gust, 55 Ind. 45; Kelley v. Silver Spring Co., 12 R. I. 112; White v. Witteman Lithographic Co., 131 N. Y. 631.

The law does not generally require cogs or belts to be covered, or other dangerous machinery. Says a federal judge: "So far as relates to the absence of the covering upon and around cog wheels this fact has been held by very highly esteemed authorities per se negligence on the part of the employer." (84) In Minnesota the rule is thus stated: "While the safe rule and practice is to protect dangerous machinery if practicable, it is not necessarily actionable negligence to cover or house it in any particular case, though men of ordinary prudence in such cases might do so, for the question of negligence must be determined upon the facts of each case, the question being whether the employer or master has failed in some duty he owed to the servant." (85)

By far the larger number of cases are swept within one or the other two following rules: "The master is not guilty of negligence in setting an employe to work in connection with dangerous machinery although uncovered, if the latter is instructed in respect to the operation of the machinery and the risks so that he might take care of himself; or if the employment and machinery are of such a character that the risks are so apparent that the employe must necessarily comprehend them." (86)

In some cases, either by statute or common law, employers have been regarded as negligent in not covering belts, cogs and other dangerous machinery. Such a statute exists in Wisconsin, and the Supreme Court applied it in a case in which some cog wheels were exposed and a serious accident resulted therefrom. "We have no hesitancy," said the court, "in holding that when the employer places such a dangerous piece of machinery into which his employe by the least forgetfulness or unavoidable accident may be thrown and seriously injured, in the immediate vicinity of a place, where his employe must do his work, he fails to furnish him a reasonably safe place for doing his work and is guilty of gross negligence, especially when the usefulness of the machine is not enhanced by reason of its being uncovered and where the expense of covering would be a mere trifling sum." (87)

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(83) Roth v. Northern Pacific Lumbering Co., 18 Or. 205, 21.

(84) Townsend v. Langles, 41 Fed. 919; Schroeder v. Michigan Car Co. 56 Mich. 132; Sanborn v. Railroad, 35 Kan. 292. See Kelley v. Silver Spring Co., 12 R. I. 112.

(85) Carrott v. Williston, 44 Minn. 287, 289.

(86) Carroll v. Williston, 44 Minn. 289; Craver v. Christian, 36 Minn. 413; Sullivan v. India Mfg. Co. 113 Mass. 396; The Maharajah, 40 Fed. 784; The Serapis, 51 Fed. 91; Kelley v. Silver Spring Co., 12 R. I. 112; Brick v. Firmanich Mfg. Co., 82 Iowa 286; White v. Witteman Lithographic Co., 131 N. Y. 631.

(87) Nadau v. White River Lumber Co., 76 Wis. 120, 128.

It does not follow that if an employe is negligent in leaving gearing, for example, uncovered, that it is negligence for another to work near it, for he may not know of this, or if he does, may not understand the risk he is taking. (88)

10. Passing from these to accidents in mines, it may be remarked that care and diligence must be exercised by the master. This, however, must be commensurate with the danger of the employment. "Obviously," says Judge Sanborn, "a far higher degree of care and diligence is demanded of the master who places his servant at work, digging coal beneath overhanging masses of rock and earth in a mine, than of him who places his employes on the surface of the earth where danger from superincumbent masses is not to be apprehended. The degree of care required of the master and servant also differ because defects with a piece of machinery or in the roof of a mine that to the eye of a competent inspector, such as the master employe, portend unnecessary and unreasonable risks and great danger, may have no such significance to a laborer or miner who has had no experience in watching or caring for machinery or roofs of slopes in a mine, and the latter is not chargeable with contributory negligence simply because he sees or knows the defect, unless a reasonably intelligent and prudent man would, under like circumstances, have known or apprehended the risks which those defects indicate." (89)

From this unusually luminous opinion let us turn to a recent exposition of the law on this subject by the Supreme Court of Indiana: "The nature of the employment is in itself so very hazardous that those who engage in it must know that it is attended with risks against which human foresight and skill cannot guard. One of the dangers attendant upon mining is that from falling earth, stone, slate or coal. These dangers are greatest, perhaps, in the rooms where the miner works, while the tunnels or entry through which he may have to pass to and from his work can be more or less guarded and protected. That, as to all of the dangers ordinarily incident to the employment, the servant assumes the risks, is elementary law. But to determine what are the risks naturally and ordinarily incident thereto, is not always easily done, depending to a very great extent upon the nature of the employment.

"It may be safe to state, however, as a general proposition, that under the usual and ordinary contracts of employment between a master and a servant, whether the engagement be for service in a factory, on a railroad, or in a coal mine, the master undertakes to use reasonable care to see that his machinery is in good condition and repair and that the place where the servant is to work is free from dangers other than those which are naturally attendant upon the work to be performed. Hence, when it is said that a master operating a coal mine shall furnish his servants with a reasonably safe place to work, it is not intended that the place shall be so timbered and guarded that rock, slate, earth or coal cannot fall, because to so protect the working place must necessarily destroy the ability to operate the mine. And if the place furnished by the master appears to the servant to be free from any dangers except those which are naturally incident to the work, the servant, unless he sees that it is not so, has a right to assume that the master has performed his duty and that the place is as it appears. In other words, the servant is not bound to seek for latent defects or dangers, which do not necessarily arise from the nature of the employment, and against which it is the duty of the master to use reasonable care to guard. And when it is said that the servant assumes the risk of dangers of which he has knowledge, it is not meant that he assumes no risks except from dangers of which he has actual knowledge or which are patent, for he does assume the risk of latent as well as patent dangers, which are a mutual incident of the service and which it is not the duty of the master to guard against; that is, dangers, whether visible or invisible, known or unknown, at the time of employment, if they are such as naturally arise from the nature of the work to be performed, he assumes. It is for this reason that he is required to exercise reasonable care to ascertain and know of dangers which may exist or even arise suddenly and confront him during his service.

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(88) Wuotilla v. Duluth Lumber Co., 39 Minn. 153.

(89) Union Pacific R. v. Jarvi, 53 Fed. 65, 68, 69.

"Unless the servant by his contract of employment or the nature of the services to be rendered require that he inspect the place where he has to work for hidden or latent defects which are simply the result of the master's inattention or negligence, he is not bound to do so. The duty of inspection to ascertain and guard against dangers and defects not naturally incidental to the work to be performed by the servant, rests upon the master. But as to the dangers which are naturally incident to the service, the servant is bound to acquaint himself, even to the extent, if necessary to do so, of making a minute and thorough inspection. Hence, those dangers which an experienced miner knows must and do threaten him at all times, are an incident to the service and are assumed by him." (90)

To prevent accidents arising from gas and other explosives it is the duty of a mine operator to use all appliances readily obtainable known to science for their prevention. (91) Furthermore, a miner does not waive defects in the construction of a mine by continuing to work there until he has had reasonable time to become acquainted with their bearings and the hazards of his employment. (92)

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(90) Ross, J., Linton Coal & Mining Co. v. Persons, 15 Ind. App. 69, 71. For other mining cases, see Bunt v. Sierra Butte Gold Mining Co., 138 U. S. 483; Quick v. Minnesota Iron Co., 47 Minn. 361; Sampson Mining & Milling Co. v. Schoad, 15 Col. 197; Paule v. Florence Mining Co., 80 Wis. 350.

In the case of a miner in Utah that was carefully considered, the Supreme Court said: "It is contended that the plaintiff undertook, for an extra compensation, to perform a hazardous service; that is true, but he only contracted to take upon himself the risks incident to the employment. He did not agree to take extraordinary risks growing out of the negligence of the company, and to which it had not called his attention. The employer owes to his servant the duty of furnishing him a safe and proper place in which to prosecute his work, so far as he is able to do so by the exercise of ordinary care and diligence. This duty he cannot delegate to an agent or servant, so as to excuse himself, or so as to escape responsibility to another, who has been injured by his non-performance. The degree of care exacted of the employer is in proportion to the hazards and perils of the service in which his servants are engaged. The more hazardous the employment the more watchful and careful should the master be to guard against the danger or injury to his servants through insecurity or want of safety in the premises to which his servants are required to prosecute their work." (93)

11. Passing to excavations, these may be briefly considered, for no special principles have been established concerning them. In most cases of this nature—and they are quite numerous—they have been determined by the application of the principle that the employes assumed the dangers attending their employment. They knew what they were quite as well as their employers, and so they had no cause for complaining when injured. If an employer has knowledge which he intentionally conceals, or forgets to give to his employes, concerning the danger, which they do not have, nor could reasonably be supposed to have, then he is liable for not putting them on the same plane as himself. In one of these cases, the Supreme Court of Indiana said: "Where the danger is alike open to the observation of all, both the master and the servant are upon an equality, and the master is not liable for an injury resulting from the dangers incident to the business." (94) In another case, in which a workman was injured by the caving in of a gravel bank, the Supreme Court said: "The law is that if the plaintiff where at work in the gravel bank on the day he was injured, fully knew

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(91) Western Coal & Mining Co. v. Berberich, 94 Fed. 324.

(92) Crabell v. Wapello Coal Co., 68 Iowa 751.

(93) Tribay v. Brooklyn Lead Mining Co., 4 Utah 468, 475.

(94) Swanson v. City of Lafayette, 134 Ind. 627.

the hazards of the work—if he knew that he was at work in a dangerous place, and that the bank of earth above was liable to fall upon him—he cannot recover in this action. In that case it was quite immaterial that the work might have been made safe by detaching earth from the bank above him, or in any other manner. Having such knowledge his implied contract was that he assumed the hazards of the employment incident to the business as it was conducted." (95)

12. There is a long series of accidents happening from openings in floors, the lack of rails, the careless or negligent opening of doors, which will now be considered. The first rule to be stated is, if an employe knows of a dangerous hole in a floor, bridge or other structure or that a railing does not exist where evidently one ought to be, he cannot recover if he suffers in consequence of the defect. This is merely another application of the familiar rule that when he knows of a risk attending his employment and continues to labor he assumes it. (96)

In Anthony v. Luret, (97) an employe was injured by falling through a trap door in a passage way. The court remarked that the employer's negligence, if there was any, consisted in locating the trap door as he did, or in not adequately guarding it. The complete answer to the claim was that the employe knew where the trap door was and by continuing in the employment accepted the hazards incident to the situation, "especially such hazards as might result from the non-observance by co-employes of directions designed for the protection of persons using the passage way. The location of the trap door in the passage way was not per se a wrongful act. The defendants had a right to arrange their own premises in any way which suited their convenience, and were not bound to change the arrangement to secure greater safety to the employes. If the trap door was not open to observation, if its existence was not known to those whose duty required them to use the passage way, or if the defendants had omitted to give proper instructions to those employed in the planing room, where the employe worked, a different question would be presented."

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(95) Naylor v. Chicago R., 53 Wis. 661. 665. For other cases relating to excavations, see Strahlendorf v. Rosenthal, 30 Wis. 674; Aldridge v. Midland Blast Furnace Co., 78 Mo. 559; Vincennes Water Supply Co. v. White, 124 Ind. 376; Calson v. Sioux Falls Water Co., 65 N. W. 418 (S. Dak.); Simmons v. Chicago R., 111 Ill. 340; Griffin v. Ohio & Miss. R., 124 Ind. 326; Naylor v. Chicago R., 53 Wis. 661; O'Driscoll v. Faxon, 156 Mass. 527.

(96) Cases in which he knows of the risk attending his employment and by continuing, assumes the risk: Wannamaker v. Burke, 111 Pa. 423; Anthony v. Beeret, 105 N. Y. 591; Kennedy v. Manhattan R., 145 N. Y. 288; Moulton v. Gage, 138 Mass. 390; Gleason v. New York R., 138 Mass. 68; O'Maly v. South Boston Gas Light Co., 158 Mass. 135; Wood v. Locke, 147 Mass. 604; Lovejoy v. Boston & Lowell R., 125 Mass. 79; Welsh v. St. Paul R., 27 Minn. 367. Cases in which he did not know: Plank v. New York Central R., 60 N. Y. 607; Hannah v. Conn. River R., 154 Mass. 529; Hoffman v. Clough, 124 Pa. 505.

(97) 105 New York 591.

In Massachusetts employers are required by statute to protect elevators and well holes in a specified manner. Nevertheless, if any employe falls into one, through the lack of proper care on his part he cannot recover. (98)

In another case that occurred in Wisconsin an employe was injured while ascending a steep stairway, without regular steps and no railing. Nevertheless, an employe who had used the stairway once or twice was held to be chargeable with knowledge of its defects and to have assumed the risk of using it. Said the court: "It is certainly true that it is the duty of the employer to furnish his employe a reasonably safe place to work, and with a reasonably safe appliance and apparatus. At the same time it is equally well settled that the employer may conduct his business in his own way although another method may be less hazardous, and the employe takes the risk of the more hazardous method if he knows the danger and enters on the employment. Here the plaintiff must have seen whatever defects co-existed in the construction of the stairway, for such defects were plain and obvious." (99)

A somewhat different principle applies to openings in buildings in process of construction or alteration. In these the rule is still more in favor of the employer. Says Justice Paxson, in the case of a building which was undergoing alteration: "It would be unreasonable to hold employers to the same degree of strictness during alterations to the building as might be required after such alterations were completed. The fact that alterations were being made in the presence of the employes was notice to them of the possibility of danger of some sort and of the necessity of exercising great caution." (100)

And in Sykes v. Packer, the Supreme Court of Pennsylvania said: (1) "An employer does not impliedly guarantee the absolute safety of his employe. In accepting an employment the latter is assumed to have notice of all patent risks incident thereto, of which he is informed, or of which it is his duty to inform himself. Where, therefore, he undertakes hazardous duties he assumes such risks as are incident to their discharge from causes open and obvious, the dangerous character of which causes he has had opportunity to ascertain. The master is bound to provide for the safety of his servant to the best judgment. In most cases in which danger may be incurred, the servant is as likely to be acquainted with the probability and extent of it, as the master. The latter is, therefore, not responsible for the damages attendant on the mounting of scaffolds, or unfinished staircases, landings or roofs, which the workman has voluntarily undertaken to mount with as much knowledge of the attendant risk as the person who employs him."

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(98) Taylor v. Carew Mfg. Co., 143 Mass. 470.

(99) Sweet v. Ohio Coal Co., 78 Wis. 127.

(100) Wannamaker v. Burke, 111 Pa., 423.

(1) 99 Pa. 465.

But if a carpenter is working on the roof of a building in process of construction he is not bound to inspect the condition of the walls and does not take the risk of the falling of the building in consequence of their insufficiency. (2)

Again, an employe assumes the risks of injury which are incident to his employment; but when one in charge of a carding machine in a cotton mill is injured by falling into an opening in the floor, in a dark passage way, near his machine, of which he had no knowledge, the danger in such a case is an incident to the place of the employment and not to the employment itself. (3)

CHAPTER VII.

ASSUMPTION OF RISKS AFTERWARD DISCOVERED BY CONTINUING IN THE SERVICE.

1. The great rule defining the liability of employers has been radically modified in another direction. Not only may they use such machinery and appliances as they please, however defective, provided their employes know of the defects, or these are so obvious that they ought to know of them at the outset of their service; but employers may also be relieved of liability for defects or imperfections afterward discovered or known by their employes if they continue at their places of service. (4) Thus, an employer hired an incompetent servant, knowingly, indeed, and his incompetency was known by another servant in the same employment, who, nevertheless, continued working with him, and gave no notice of his discovery to his master or to anyone authorized to act for him. Consequently he could recover nothing, though he was afterward injured through the negligence of the incompetent fellow-workman. In other words the servant assumed the new risk, though in fact it was no greater after the discovery than before. This invasion of the rule is in harmony with the invasion already noted, concerning the use of dangerous appliances and working in dangerous places. If a machine is defective the employe need not at-

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(2) Giles v. Diamond State Iron Co., 8 At. 368 (Del.).

(3) Hoffman v. Clough, 124 Pa. 505.

(4) Huddleston v. Lowell Machine Shop, 106 Mass. 282.

tempt to manage it; surely, the courts say, he is not obliged to hire himself out under such conditions. In like manner, if it becomes defective and he continues to use it he runs the risk. If he is afraid of injury, he may quit; and the courts say he is justified in doing so. But if he takes his chances, it is his own affair, he runs the risk, and if he is injured he cannot complain. The same infraction of the rule, as we have now seen, applies to working with incompetent employes. (5)

In the case of the United States Rolling Stock Co. v. Wilder, (6) the Supreme Court of Illinois said: "All that the law demands (of an employe) is that he can keep his eyes open to what is passing before him, and to avail himself of such information as he may receive with respect to the habits and characteristics of his fellow-servants, and if from either of these sources of information, he finds one of them, from incompetency or other cause, renders his position exhazardous, it is his duty to notify the master, and if the latter refuses to discharge the incompetent or otherwise unfit fellow-servant, the complaining servant will have no other alternative but to quit the master's employ. If he does not, he will be deemed to have assumed the extra hazard of his position thus occasioned."

2. When a servant, knowing that the machinery he is operating is so defective as to render its use dangerous, simply protests against its use, and, after protest, having received no assurance that the defect will be remedied, he continues to use it, the most general rule is that the servant assumes the risk incident to the use of such machinery, for his remaining in the service is voluntary. Protest

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(5) Indiana: Rogers v. Leydon, 127 Ind. 50; Rietman v. Stolte, 120 Ind. 314; Indianapolis R. v. Watson, 114 Ind. 20.

Maine: Buzzell v. Laconia Mfg. Co., 48 Me. 113; Wormell v. Maine Central R. Co., 79 Me. 397.

Massachusetts: Hatt v. Nay, 144 Mass. 186.

Michigan: Fort Wayne R. v. Gildersleeve, 33 Mich. 133; Davis v. Detroit R., 20 Mich. 105; Swaboda v. Ward, 40 Mich. 420; Davis v. Detroit R., 20 Mich. 105.

Missouri: McDermott v. Hannibal St. Joseph R., 87 Mo. 285; Alcorn v. Chicago & Alton R., 108 Mo. 81.

New York: Gibson v. Erie Railway Co., 63 N. Y. 449; DeForest v. Jewett, 88 N. Y. 264; Sweeney v. Berlin v. Jones Envelope Co., 101 N. Y. 520; Hickey v. Taafe, 105 N. Y. 26; Williams v. Delaware, Lack. & W. R. Co., 116 N. Y. 628; Davidson v. Cornell, 132 N. Y. 228; Webber v. Piper, 38 Hun. 353.

Pennsylvania: Frazier v. Pennsylvania R., 38 Pa. 104, 111; Schwenk v. Kehler, 122 Pa. 67, 77; Mansfield Coal & Coke Co. v. McEnery, 91 Pa. 185, 194; New York, L. E. & W. R. Co. v. Lyons, 119 Pa. 324, 336; Patterson v. Pittsburg & Connellsville R. Co., 76 Pa. 389, 394.

United States: Tuttle v. Milwaukee R. Co., 122 U. S. 189.

Wisconsin: Haley v. Jump River Lumber Co., 81 Wis. 412; Abbot v. McCadden, 81 Wis. 563; Dorsey v. P. & C. Construction Co., 42 Wis. 583.

(6) 116 Ill. 109.

against, or objection to, a service rendered dangerous by defective machinery if the party making the protest or objection is under no legal obligation to remain in the service, cannot render the service subsequently performed voluntary.

3. Again, though a servant may know of a defect and of the danger, yet if his duties do not ordinarily bring him within the scope of the danger, and he is nevertheless injured by its occurrence, the master is liable. (7)

4. The courts have gone still further. If the appliances used by a workman become defective, or the place wherein he is working becomes more dangerous, in short, if the risk of his employment is increased, and he continues to work as before, whether notifying his employer or not of the increased risk, he assumes it as he did the ordinary risk in the beginning.

5. This rules does not prevail everywhere. In Virginia it is repudiated. In a railroad case the company desired the court to instruct the jury "to the effect that an employer is released from all liability of negligence, although aware of its continued existence, if the injured employe continued to work for him after he knew of the negligent and dangerous manner in which the employer allowed his business to be conducted." The instruction, however, was not given, and it was declared to be "palpably improper. It is sanctioned neither by reason, justice, nor law. The usual and legal duty of every employer is to provide all means and appliances reasonably necessary for the safety of those in his employment. It is a cruel and inhuman doctrine that the employer, though he is aware that his own neglect to furnish the proper safeguard for the lives and limbs of those in his employment puts them in constant hazard of injury, is not to be held accountable to those employes, who, serving him under such circumstances, are injured by his negligent acts and omissions, if the injured parties, after themselves becoming cognizant of the peril occasioned by their employer's negligent way of conducting his business, continue in his employment and receive his pay, though they may be virtually compelled to remain by the stern necessity of earning the daily food essential to keep away starvation itself." (8)

6. When an employe is incompetent or an appliance has become defective, an employe who is liable to suffer must notify his employer of his discovery, otherwise he is regarded as assuming the newly discovered risk. Says the Supreme Court of Kansas: "If an employe knows that another employe is incompetent, or habitually negligent, or that the materials with which he works are defective, and he continues to work without objection, and without

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(7) Sanborn v. Madera Flume & Trading Co., 70 Cal. 261.

(8) Richmond & Danville R. v. Norment, 84 Va. 167, 173.

being induced by his employer to believe that a change will be made, he will be deemed to have assumed the risk of such incompetency, negligence or defects, and cannot recover for an injury resulting therefrom." (9)

7. When an employer has been notified of the incompetency of a servant, or of a defective appliance, he has a reasonable time to investigate the truth of the notice before acting. He is not required, if a charge, for example, is made of the incompetency of a servant, to discharge him instantly on receiving the notice. Furthermore, he is not liable during the reasonable period given him by law for investigation; to require an employer to act at once or to retain an employe at his peril has been thought harsh, but is not the situation equally harsh for the employe if he is required to assume the risk this incurred without securing any additional compensation, or to retire. This, surely, is a harsh alternative. (10) Says the Supreme Court of Alabama: "The defendant must have had notice—a sufficient time to remedy the defect after its discovery before it could be chargeable with negligence in failing to effect such remedy. Mere knowledge, without the opportunity to act upon it, would not constitute negligence." (11)

8. The notice must be given to the employer or to his representative. It is, therefore, a question for the jury whether an engineer who alone inspects his engine occupies such a relation to the company that notice to him of a defect is notice to the company. This rule was declared by the Supreme Court of Michigan in a case in which it was said "that if the company makes no other provision for inspection and choose to rely upon the reports of its men, deferring repairs until breaks occur, or until the operators, in due course of business, report defects, we must either say that it has neglected the duty of inspection altogether, or that

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(9) Kansas Pacific R. v. Peavey, 34 Kan. 472, 479; Kroy v. Railroad, 32 Iowa 357; Laning v. New York Central R., 49 N. Y. 521; McQueen v. Railroad, 30 Kan. 689; Jackson v. Railroad, 31 Kan. 761; Hayden v. Smithville Mfg. Co., 29 Conn. 548; Mad River v. Barber, 5 Ohio St. 541; United States Rolling Stock Co. v. Wilder, 116 Ill. 100; Hatt v. Nay, 144 Mass. 186; Lake Shore R. v. Knittal, 33 Ohio St. 468; Lucey v. Hannibal Oil Co., 129 Mo. 32.

(10) Indiana: Lake Shore R. v. Steepak, 108 Ind. 1, s. c. 123 Ind. 210; Ohio & Miss. R. v. Collarn, 73 Ind. 261; Indiana R. v. Dailey, 110 Ind. 75; La Rose v. Bank, 102 Ind. 332.

Maine: Blake v. Railroad, 70 Me. 60.

Missouri: Moss v. Railroad, 49 Mo. 167.

Kentucky: McDowell v. Railroad, 5 S. W. 413.

New York: Chapman v. Railroad, 55 N. Y. 579.

Federal: Ross v. Chicago R., 8 Fed. 544.

(11) U. S. Rolling Stock Co. v. Weir, 96 Ala. 157; Seaboard Mfg. Co. v. Woodson, 94 Ala. 143; Wilson v. Railroad, 85 Ala. 269; Indianapolis R. v. Flanagan, 77 Ill. 365.

it has imposed one of its duties upon its operatives, and that it does not fall within the limits of fellow-service, or that it may avoid the duty which the law imposes by invoking the rule of fellow-servant. So long as operatives do report, and the master repairs promptly, the jury may properly say that there is no negligence on the part of the master; but if defects are not reasonably repaired, the master neglects a duty, and we should not split hairs to determine whether it was his personal carelessness, or that of the agent whom he appoints to apprise him of his impending duty to repair, although such agent is a fellow-operative of one who is injured by reason of a want of seasonable repair." (12)

CHAPTER VIII.

EFFECT OF AN EMPLOYER'S PROMISE TO REPAIR.

1. To the rule last mentioned there is an important modification. If an appliance or place has become defective, or a co-employe has proved himself to be incompetent, and the employer, after the knowledge of this discovery, whether it be that of an employe or his own, promises to repair the defect or provide a competent employe, and other continue to expose themselves to the newly-discovered danger by reason of their master's promise, in most states he is responsible for any injury happening to them afterward springing from the discovered defect, whether it be an appliance, workman, or whatever be its nature. This seems to be a reasonable rule. In such cases an employe does not assume the increased risk. The master virtually says to him, "continue to work, and if you are injured I will bear the loss." (13) It is presumed that the employe would not continue at his post except for his master's promise to lessen or remove the risk. If, therefore, an accident happens to the employe before his employer has acted, or he is negligent in acting, in either case the employer is liable. (14)

2. If, however, the defect be very serious, the employer has been held not to be liable on his promise to repair during even the reasonable period required to make them. This is on the ground

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(12) McDonald v. Michigan Central R., 108 Mich. 7, 11; Brown v. Gilchrist, 80 Mich. 56; Johnson v. Spear, 76 Mich. 139; Van Dusen v. Letellier, 78 Mich. 492; Morton v. Railroad, 81 Mich. 431; Dewey v. Railroad, 97 Mich. 333; Fuller v. Jewett, 80 N. Y. 46; Flike v. Railroad, 53 N. Y. 549; Beesley v. Wheeler, 61 N. W. 659.

(13) Coombs v. New Bedford Cordage Co., 102 Mass. 572, 586; Clarke v. Holmes, 7 H. & N. 937.

(14) Brownfield v. Hughes, 128 Pa. 194; Swaboda v. Ward, 40 Mich. 420; Sherman v. Chicago R., 34 Minn. 359.

that the employe ought not to have assumed the risk anyhow; that he was unwise in so doing and ought to be punished by shutting off all chance of recovery. This is not the rule everywhere. The distinction has thus been stated in one of the cases: "When the servant, in obedience to the requirements of the master, incurs the risk of machinery, which, though dangerous, is not so much as to threaten immediate injury, or where it is probable it may be safely used by extraordinary caution and skill, the risk is one not assumed. On the other hand, if the defect was so great, the danger was so imminent, so much so that none but a reckless man would incur it, the employer would not be liable." (15) But some courts do not accept this doctrine.

3. "The promise must be by the master or his representative." Thus remarked the court in Ehmcke v. Porter. (16) "A master may intrust to another the performance of the duty he owes to his servants to exercise care in providing them a safe place in which, and safe instrumentalities with which, to do their work; and when he has done so, a promise to a servant by such other to remedy the dangerous condition of things is equivalent to a promise by the master himself."

4. If the employer promises to repair the defect, the employe "can recover for an injury caused thereby within such period of time after the promise as it would be reasonable to allow for its performance, and, as we think for an injury suffered within any period which would not preclude all reasonable expectations that the promise might be kept." This statement of the rule was made by the Supreme Court of the United States and everywhere prevails. This promise removes all ground for holding that the employe assumes the enlarged risk. (17)

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(15) Patterson v. Railroad, 76 Pa. 389; Conroy v. Vulcan Iron Works, 62 Mo. 35; Hough v. Railroad, 100 U. S. 213; Loonam v. Brockway, 3 Rob. (N. Y.) 74; Illinois Central R. v. Jewell, 46 Ill. 99; Crichton v. Keir, 1 C. Ses. Cas. (3d Series) 407; Indianapolis R. v. Watson, 114 Ind. 20, 32.

(16) 45 Minn. 338.

(17) Illinois: Mo. Furnace Co. v. Abend, 107 Ill. 44.

Indiana: Indianapolis R. v. Watson, 114 Ind. 20.

Iowa: Greenleaf v. Railroad, 33 Iowa 52; Kroy v. Railroad, 32 Iowa 357.

Michigan: Lyttle v. Railroad, 84 Mich. 289; Marquette R. v. Spear, 44 Mich. 169.

Minnesota: LeClair v. Railroad, 20 Minn. 9; Greene v. Railroad, 31 Minn. 248.

Missouri: Conroy v. Vulcan Iron Works, 62 Mo. 35.

New York: Laning v. Railroad Co., 49 N. Y. 521; Marsh v. Chickering, 101 N. L. 396; Hawley v. Railroad, 82 N. Y. 370.

Ohio: Union Mfg. Co. v. Morrissey, 40 Ohio St. 150.

Pennsylvania: Patterson v. Railroad, 76 Pa. 389.

Wisconsin: Stephenson v. Duncan, 73 Wis. 407; Corcoran v. Milwaukee Gaslight Co., 81 Wis. 194.

United States: Hough v. Railway Co., 100 U. S. 213.

What is a promise to repair? It has been declared that when employes complain of an impending peril in a position to which they have been ordered, and they notify their employer of the danger, and ask to be relieved, he cannot refuse to relieve them, insist on their continuing to work in that position, and, as they remain at his discretion, waiting for an inspection which he has promised but neglects to make, relying on his promise and superior judgment, and fearing the consequences of disobedience, and are injured, be then allowed to say, "You were guilty of contributory negligence in doing what I directed you to do," or "you assumed that risk when you entered my employment." Under such circumstances, employes cannot be said to have either heedlessly or voluntarily assumed the risk. (18)

5. After a reasonable time for making the repairs has passed, and they are not made, the employe is deemed to have waived his objection and assumed the still greater risk that has actually arisen or come to his knowledge. (19) This rule does not prevail in all the states. Says the Supreme Court of Missouri: "The rule is too well settled in this state to require the citation of cases, that a person when he enters the service of another assumes all the risks and dangers usually incident to the employment in which he engages. But the rule is equally well settled that the employer is charged with the duty of not subjecting his servants to risk by his own negligence. Under this rule he is required to use ordinary care, not only in providing sound and secure instrumentalities which they are required to employ in their work, but in keeping them in such condition. This is a continuing duty of the master, and a neglect of it is negligence. On entering the employment the servant does not assume the risk of dangers arising from its neglect. It is claimed that though the duty to repair defects is neglected by the master, if the servant is advised of its and thereafter elects to continue in the service and to use the defective means, he thereby assumes the risk therefrom. The rule thus invoked would relieve the master of his duty, as soon as the servant became aware of its violation.

"Such, however, is not the law of this State. The duty to repair is a continuing one, and a failure to discharge it is negligence, though the servant may continue in the service after knowledge thereof. An expressed contract will not relieve him." (20)

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(18) Schlacker v. Ashland Iron Mining Co. 89 Mich., 253, 262. If a master promise to remove an incompetent servant, a fellow- or so-servant may remain for a time in his service without being chargeable with contributory negligence: Lyberg v. Northern Pacific R., 39 Minn. 15.

(19) Stephen v. Duncan, 73 Wis. 407; Davis v. Graham, 2 Colo. App. 210).

(20) Settle v. St. Louis R., 127 Mo. 336.

6. Whether the servant has waived the neglect of the master and assumed the risk of the promise to repair is a question for the jury. Though the promise may have been given under such conditions, the question of waiver of performance may be one of law for the court. (21)

7. There is another exception to the efficiency of the employer's promise to repair. (22) We have seen that there are cases in which employers are not required to make any inspection of the tools used by their servants for the reason that the latter know as much or more about their condition than their masters. This rule applies to the small tools used by farmers, axes, ladders, chains and the like. In such cases if a defect appears and the servant notifies his master and asks for another instrument, and he promises "to furnish the same, in such a case, the promise does not render the master responsible if the accident occurs." Why this exception should be made to the validity of the master's promise is not stated. Nor can we discover any reason why it should be made. Simply because the danger from using it may be less or less serious, is no reason for absolving the master.

8. This, then, is the other remnant left of the great principle that first determined the duties of an employer. If an appliance of his becomes defective or dangerous to use, and he promises the user that he will repair it if he will continue to work, he is holden for the consequences. The law does not regard the laborer as taking the assumed risk, but rather as determined to quit if this assurance is not given to him. Even this exception, as we have seen, does not exist in some states, for if repairs are not made in a reasonable time, the law regards the employer as having changed his mind, with the right to do so; consequently, if an employe continues to work beyond the reasonable time and no repairs are made, he is regarded as assuming the greater risk. In these states, therefore, only a mere fragment is left of the great rule which has been stalking in an ever vanishing form around the courts.

CHAPTER IX.

WHO ARE FELLOW-SERVANTS?

1. That the rule established in Priestley v. Fowler would lead to unending litigation was inevitable, for who are to be regarded as

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(21) Laning v. Railroad, 49 N. Y. 521; Hawley v. Railroad, 82 N. Y. 370; Stephenson v. Duncan, 73 Wis. 407; Union Mfg. Co. v. Morrissey, 44 Ohio St. 150; Mo. Furnace Co. v. Abend, 107 Ill. 44; Patterson v. Railroad, 76 Pa. 389; Hough v. Railway Co., 100 U. S. 213; Lewis v. Railroad, 153 Mass. 76.

(22) Marsh v. Chickering, 101 N. Y. 396, 400.

fellow-servants, and who not? A double question was soon raised; how closely must employes of the same common employer be associated to establish between them the relation of fellow-service was one of them; and between what relation in the rank of employment were employes to be regarded as fellow-servants was the other. There can be no question between two men, for example, who are hewing stones for a common employer that they are fellow-servants, but are they fellow-servants with others who are engaged in hauling stone to the place of hewing, or fellow-servants with the quarrymen? Thousands of such questions have arisen under this famous rule.

Again, is a foreman or superintendent of men to be regarded as one of them, or as an agent or representative of his employer? If he is a fellow-servant, then his employer cannot be held for the consequences of his negligence; if, on the other hand, he is an agent or superior, his employer is as responsible as though the negligent act was done by himself.

What rules or distinctions have been established to determine when an employe is simply an employe, and when he is an agent? And we may remark by way of answer that while several have been set up, not a rule has yet been found to mark off clearly the relationship between employers and employes that has won universal adoption. Some states have set up one rule, some another; others have wobbled and after establishing a rule and discovering how difficult it was to apply it, have set up another.

In a recent deliverance Justice Magie said: "There are doubtless many cases where it will be difficult to draw the line between the employe who represents his employer, and the workman who stands on the footing of a common employment with his fellow-workmen. To attempt to explore the adjudge cases on this subject is to bewilder one's self in a maze of decisions inconsistent with each other and often irreconcilable with the principles at the foundation of the liability of the master to the servant." (23)

Why is there such a maze of decisions? Is not the reason obvious, even to the blindest, because the great rule of duty or liability is irrational, unworkable. Courts have been continually differing in applying it, not because they wished to differ, but because the rule is imperfect. Courts have been both honest and intelligent, and have sought to build up a harmonious system of law, but the rule has defied their best efforts. This is the plain truth; has not the fulness of time come, therefore, after this long and fruitless march on the costly judicial road, to adopt another rule more consonant with reason and less difficult in its application?

2. We may start out with the unquestioned rule that, when a master

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(23) Rogers Locomotive Works v. Hand, 50 N. J. Law. 466.

delegates to another the performance of a duty which rests absolutely on himself to perform, the master is liable for the manner in which the duty is executed. (24) The employe's rank, whether he is above or on the same level as that of other employes, does not affect the master's liability. Says the Supreme Court of Colorado: "The accepted general rule is that where the negligent agent or servant can fairly be said to take the place of the master, and represent him so as to become in reality a vice-principal, and the negligence occurs in the discharge of his representative duties, the master's liability may attach. But the difficulty arises in determining what power and duties constitute a vice-principal in each particular case. This is where the divergence among the more modern and better considered cases begins. It is asserted that one is a vice-principal to whom the master deputes the power of appointment and dismissal. But while the power of appointment and dismissal is undoubtedly an attribute of the master, its possession alone is, by other authorities, declared not to be always decisive." (25)

This rule has been tersely stated by the Supreme Court of Michigan in these words: "If the act (be one) that the law imposes the duty upon the part of the master to perform, then the offending employe is not a fellow-servant, but a superior or agent, for who acts the master is held liable." (26)

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(24) Lindvall v. Woods, 41 Minn. 216; Dwyer v. American Express Co., 82 Wis. 307; Sullivan v. New York R., 622 Conn. 215.

(25) Colorado Midland R. v. Naylor, 17 Colo. 501.

(26) United States: Randall v. Baltimore & Ohio R., 109 U. S. 483; Northern Pacific R. v. Herbert, 116 U. S. 647; Northern Pacific R. v. Peterson, 162 U. S. 346.

Arkansas: Fones v. Phillips, 39 Ark. 17; St. Louis R. v. Harper, 44 Ark. 524.

California: Ryan v. Los Angeles Ice Co., 112 Cal. 244; Davies v. Southern Pacific R., 98 Cal. 19.

Colorado: Denver R. v. Driscoll, 12 Colo. 520; Colo. Midland R. v. O'Brien, 16 Colo. 219.

Connecticut: Gerrish v. New Haven Ice Co., 63 Conn. 9.

Georgia: Cheeney v. Ocean Steamship Co., 92 Ga. 726.

Illinois: Chicago R. v. Kneirim, 152 Ill. 458; Mobile R. v. Godfrey, 155 Ill. 78.

Indiana: Taylor v. Evansville R., 121 Ind. 124; Louisville R. v. Miller, 140 Ind. 685.

Kansas: Kansas Pacific R. v. Salmon, 14 Kan. 512; Cherokee Coal Co. v. Britton, 3 Kan. App. 292.

Maine: Donnelly v. Booth Brothers, 90 Me. 110.

Iowa: Fosburg v. Phillips Fuel Co., 93 Iowa 54.

Maryland: State v. Malster, 57 Md. 287.

Massachusetts: Kelley v. Norcross, 121 Mass. 508; Moynihan v. Hills Co., 146 Mass. 586.

Michigan: Brown v. Gilchrist, 80 Mich. 409; Harrison v. Detroit R., 79 Mich. 409; Palmer v. Michigan Central R., 93 Mich. 363.

3. The second rule is quite as clear, that a person who represents his master fully, taking charge of his entire business so far as his employer is concerned, is not, under any circumstances, a fellow-servant with those employed by him. Says Chief Justice Ruger: "When the general management and control of an industrial enterprise or establishment is delegated to a superintendent with power to hire and discharge servants, to direct their labors and employ suitable means and appliances for the conduct of the business, such superintendent stands in the place of the master, and his neglect to adopt all reasonable means and precautions to provide for the safety of the employes constitutes an omission of duty on the part of the master, rendering him liable for any injury to the servant therefrom." (27)

The Supreme Court of Indiana, speaking through Justice Woods, has said: "A general agent employed to represent the master in his absence and charged with the duties which it would be incumbent on the master to perform, if he were present, is not a mere fellow-servant, whose negligence can impose no liability upon the master, to an injured subordinate. The owner of mills or ma-

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Minnesota: Tierney v. Minneapolis R., 33 Minn. 311.

Missouri: Higgins v. Mo. Pacific R., 43 Mo. App. 547; Dayharsh v. Hannibal & St. Joseph R., 103 Mo. 570; Coontz v. Mo. Pacific R., 121 Mo. 652.

New Jersey: Maher v. Thropp, 59 N. J. Law 186.

New York: Flike v. Boston & Albany R., 53 N. Y. 549; Hankins v. New York R., 142 N. Y. 416; Stringham v. Stewart, 100 N. Y. 516.

North Dakota: Ell. v. Northern Pacific R., 1 N. Dak. 336.

Oregon: Anderson v. Bennett, 16 Ore. 515; Miller v. Southern Pacific R., 20 Ore., 285.

Pennsylvania: Lewis v. Seifert, 116 Pa. 628; Ross v. Walker, 139 Pa. 42.

Rhode Island: Mulvey v. R. I. Locomotive Works, 14 R. I. 204; Brodeur v. Valley Falls Co., 16 R. I. 448.

South Carolina: Gunter v. Graniteville Mfg. Co., 18 S. Car. 262; Wilson v. Charleston R., 51 S. C. 79.

Texas: Texas R. v. Whitmore, 58 Texas 276; San Antonio R. v. Adams, 6 Tex. Civ. App. 102.

Utah: Chapman v. Southern Pacific R., 12 Utah 30.

Virginia: Moon v. Richmond R., 78 Va. 745; Torian v. Richmond R., 84 Va. 192.

Vermont: Davis v. Central Vt. R., 55 Vt. 84.

Washington: Ogle v. Jones, 16 Wash. 319.

Wisconsin: Brabbits v. Chicago R., 38 Wis., 289; Johnson v. Ashland First Nat. Bank, 79 Wis. 414.

(27) Indiana: Mitchell v. Robinson, 80 Ind. 281; Indiana Car Co. v. Parker, 101 Ind. 181; Krueger v. Railroad, 111 Ind. 51; Pennsylvania Co. v. Whitecomb, 111 Ind. 212.

Kansas: Kansas Pacific R. v. Little, 19 Kan. 267.

New York: Pantzar v. Tilly Foster Iron Mining Co., 99 N. Y. 368, 372; Corcoran v. Holbrook, 59 N. Y. 517.

Pennsylvania: Ross v. Walker, 139 Pa. 42, 49; New York R. v. Bell, 112 Pa. 400; Lewis v. Seifert, 116 Pa. 628; Prescott v. Ball Engine Co., 176 Pa. 459.

chinery, which men are employed to operate, owes duties to the employes which he cannot escape by absenting himself and committing the entire charge to an agent." (28) And in another case the same court remarked: "Whoever is appointed or permitted to discharge duties which pertain to the station or function of ememployer must, upon the plainest principles of reasoned justice, be held to stand as the representative of the employer, and, in case injury results from this neglect, the latter must answer for his delinquency." (29)

Likewise, in Maryland, it is declared that if a master leaves everything to another, then he is a vice principal. (30) "Where the middle man, or superintendent, is entrusted with the discharge of the duties incumbent upon the master, as between the latter and the servants, then the master may be liable for the omissions or neglect of the manager or superintendent in respect to those duties. If the master relinquishes all supervision of the work, and entrusts not only the supervision and direction of the work, but the selection and employment of the laborers, and the procuring of materials, machinery and other instrumentalities necessary for the service, to the judgment and direction of a manager or superintendent, in such case the latter becomes a vice-principal, and for his omissions or negligence in the discharge of those duties, the principal will be liable." (31)

The rule has been well expressed by Justice Mitchell: "A vice-principal for whose negligence an employer will be liable to other employes must be either, first, one in whom the employer has placed the entire charge of the business, or of a distinct branch of it, giving him not mere authority to superintend certain work or certain workmen but control of the business, and exercising no discretion or oversight of his own; or, secondly, one to whom he delegates a duty of his own which is a direct, personal and absolute obligation from which nothing but performance can relieve him." (32)

4. The third rule pertains to corporations. "The directors, president and superintendent of a company are not fellow-servants. Perhaps other officers may be included, but these certainly are not fellow-employes." Says Justice Brewer: (33) "The directors are the managing agents; their negligence must be adjudged the negligence of the corporation, although they are simply agents. So, when

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(28) Mitchell v. Robinson, 80 Ind. 281; Indiana Car Co. v. Parker, 100 Ind. 181; Krueger v. Railroad, 111 Ind. 51; Pennsylvania Co. v. Whitecomb, 111 Ind. 212.

(29) Cincinnati R. v. McMullen, 117 Ind. 439, 444.

(30) State v. Malster, 57 Md. 308.

(31) Murphy v. Smith, 19 C. B. (N. S.) 361; Malone v. Hathaway, 64 N. Y. 5.

(32) Prevost v. Citizens' Ice Co., 185 Pa. 617, 621.

(33) Baltimore & Ohio R. v. Baugh, 149 U. S. 382.

they place the entire management of the corporation in the hands of a general superintendent, such general superintendent, though himself only an agent, is almost universally recognized as the representative of the corporation, the master, and his negligence as that of the master. And it is only carrying the same principle a little further and with reasonable application, when it is held that if the business of the master and employer becomes so vast and diversified that it naturally separates itself into departments of service, the individuals placed by him in charge of those separate branches and departments of service, and given entire and absolute control therein, are properly to be considered, with respect to employes under them, vice-principals, representatives of the master, as fully and as completely as if the entire business of the master was by him placed under charge of one superintendent." (34) The same court also incorporate into its opinion the following rule established by the New York Court of Appeals: "Corporations necessarily acting by and through agents, those having the superintendence of various departments, with delegated authority to employ and discharge laborers and employes, provide materials and machinery for the service of the corporation, and generally direct and control under general powers and instructions from the directors, may well be regarded as the representatives of the corporation, charged with the performance of its duty, exercising the discretion ordinarily exercised by principals, and, within the limits of the delegated authority, the acting principal." (35)

5. The fourth rule is, a person to whom the principal delegates the duties for the performance of which he is absolutely responsible, is not a fellow-servant. These duties, as we have seen, are that an employer must exercise due and ordinary care (1) in selecting suitable and competent servants; (2) in furnishing them with suitable materials and machinery and appliances for their task; (3) in keeping the machinery and appliances in suitable repair; (4) in providing safe places for working; (5) in furnishing adequate assistance to do the work desired; and (6) lastly, in giving proper regulations or instructions to youthful or inexperienced workmen. A person, therefore, who performs these duties for his employer represents him in so doing, and the employer is responsible therefor. This rule is the law everywhere, except the clauses relating to adequate assistance and to the keeping of appliances and machinery

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(34) See remarks by Fletcher, J., King v. Boston & Worcester R., 9 Cush. 112.

(35) Malone v. Hathaway, 64 N. Y. 5, 12.

in suitable repair. The exceptions are chiefly in Massachusetts, and will be considered before concluding this chapter. (36)

a. Each of these duties may be briefly considered. First, the duty of an employer to select suitable appliances and machinery. This is a primary duty, and the employer's responsibility for doing it cannot be shifted or evaded by delegating its performance to another. The decisions are in accord concerning the rule, however much they may differ in applying it. Whether machinery and appliances are suitable for the purposes intended is a question purely of fact, and a question, too, in which precedents often count for little, and rightly, because they are so rarely in every respect the same.

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(36) United States: Hough v. Texas R., 100 U. S. 213; Great Northern R. v. McLaughlin, 44 U. S. App. 189.

California: Hallower v. Henley, 6 Cal. 209; Beeson v. Green Mt. Mining Co., 57 Cal. 20; Trask v. Cal. Southern R., 63 Cal. 95; Donnelly v. San Francisco Bridge Co., 117 Cal. 417.

Colorado: Wells v. Coe, 9 Colo. 159; Denver R. v. Sipes, 26 Colo. 17, 1899.

Delaware: Foster v. Pusey, 8 Houston 168.

Georgia: Savanah R. v. Goss, 80 Ga. 524.

Illinois: Chicago R. v. Avery, 109 Ill. 314; Leonard v. Kinnare, 174 Ill. 532; Hines Lumber Co. v. Ligas, 68 Ill. App. 523.

Indiana: Mitchell v. Robinson, 80 Ind. 281; Indiana Car Co. v. Parker, 100 Ind. 187; Indiana R. v. Snyder, 140 Ind. 647.

Kansas: Atchison R. v. Moore, 29 Kan. 632; Atchison R. v. McKee, 37 Kan. 592; Rouse v. Downs, 5 Kan. App. 549.

Maine: Sahuny v. Androscoggin Mills, 66 Me. 420; Donnelly v. Booth Brothers, 90 Me. 110.

Maryland: Cumberland R. v. State, 44 Md. 283.

Massachusetts: Snow v. Housatonic R., 8 Allen 441; Moynihan v. Hills Co., 146 Mass. 586; Killea v. Faxton, 125 Mass. 485.

Michigan: Thomas v. Ann Arbor R., 114 Mich. 59.

Minnesota: Kelly v. Erie Tel. Co., 34 Minn. 321; Blomguist v. Chicago R., 60 Minn. 426.

Mississippi: Memphis R. v. Thomas, 51 Mass. 637.

Missouri: Gibson v. Pacific R., 46 Mo. 163; Whalen v. Centenary Church, 62 Mo. 326; Covey v. Hannibal & St. Joseph R., 86 Mo. 635.

Nebraska: Sioux City R. v. Finlayson, 16 Neb. 578.

North Carolina: Cowler v. Richmond R., 84 N. Car. 309.

New Jersey: Smith v. Oxford Iron Co., 42 N. J. Law 467; Maher v. Thropp, 59 N. J. Law 186; Comben v. Belleville Stone Co., 59 N. J. Law 226.

New York: Bushby v. New York R., 107 N. Y. 374; Stringham v. Stewart, 100 N. Y. 516; Tomaselli v. Griffiths Cycle Corp., 9 N. Y. App. Div. 127.

Pennsylvania: O'Donnell v. Allegheny Valley R., 59 Pa. 239; Ardesco Oil Co. v. Gibson, 63 Pa. 146; Phila. R. v. Keenan, 103 Pa. 124.

Rhode Island: Mulvey v. R. I. Locomotive Works, 14 R. I. 204.

Texas: Houston R. v. Marcelles, 59 Texas 334; Houston R. v. Rider, 62 Texas 267; Terrell Compiers Co. v. Arrington, Civ. App. 48 S. W., 1898, 59.

Utah: Bossers v. Union Pacific R., 4 Utah 215; Cunningham v. Union Pacific R., 4 Utah 206.

Vermont: Davis v. Central Vt., 55 Vt. 84; Nyes v. Smith, 28 Vt. 59; Houston v. Brusk, 66 Vt. 331.

Washington: Ogle v. Jones, 16 Wash. 319.

Wisconsin: Schultz v. Chicago R., 48 Wis. 375; Peschel v. Chicago R., 62 Wis. 338.

In applying this rule the Supreme Court of Indiana has remarked: "When the premise is conceded that the duty to furnish reasonably safe and proper instrumentalities for the performance of the work rests upon the employer, the conclusion logically follows that the consequences of a negligent failure to perform that duty must, no matter to whom it may have been committed, be visited upon the employer, and not upon the employe, who suffered injury therefrom." (37) Adopting for the most part the language of the court of another state, the same court on another occasion said: "It is undoubtedly the duty of the employer to provide the employe with a safe working place and safe machinery and appliances. This duty is one which the law enjoins upon the master, and is one which cannot be so delegated as to relieve him from responsibility. The agent to whom it is entrusted, whatever his rank may be, acts as his master in discharging it. He is in the master's place." (38)

It will be noticed that the entire duties of the employer are not stated as an essential to constitute one to whom he has delegated his duty, or appointed to act for him, as a vice-principal. Nor must a person be clothed with authority to do all these things to constitute him a vice-principal. Evidently, in Indiana, if he is appointed to perform any one of the clear unquestioned duties of the master, he represents him in doing it and the master is responsible for his act. In that state it is the duty of the master to keep appliances, etc., in repair. This is held to be, and logically is, just as important as to furnish them in the beginning; therefore, the master is liable for the negligence of a car inspector the same as though the master had made the inspection himself. A section foreman, therefore, who can employ and discharge section hands is a vice-principal. (39)

Likewise, in Massachusetts, the Supreme Court has remarked, in the case of Lawless against a railroad: (40) "It was the duty of the defendant to furnish a locomotive engine suitable for the work which it required the plaintiff to perform with it, and to exercise ordinary care in the performance of this duty; and it was responsible to the plaintiff, if he was using due care, for an injury resulting from its negligence and want of ordinary care in this respect. It did not necessarily discharge this duty by entrusting it to suitable servants and agents, but was responsible for the negligence or want of ordinary care of such servants in the performance of the duty, were not fellow-servants of the plaintiff, but were charged with the duty required of the defendant." (41)

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(37) Cincinnati R. v. McMullen, 117 Ind. 439, 444; Bushby v. New York R., 107 N. Y. 374; Fox v. Minneapolis R., 30 Minn. 231; Macy v. St. Paul R., 35 Minn. 200; Condon v. Missouri Pacific R., 78 Mo. 567; Missouri R. v. Dwyer, 36 Kan. 58; King v. Ohio R., 8 Am. & Eng. R. Cases, 119; Braun v. Chicago R., 53 Iowa 595.

(38) Louisville R. v. Graham, 124 Ind. 89; Taylor v. Railroad, 121 Ind. 124; Hoosier Stone Co. v. McCain, 133 Ind. 231; Noll v. Railroad, 129 Ind. 260.

(39) Justice v. Pennsylvania Co., 130 Ind. 321.

(40) 136 Mass. 1.

b. The duty to furnish a safe place for work is equally primary; therefore, an agent who performs this duty for his master is not a fellow-servant. Says Justice Cartwright: "The duty to exercise reasonable care to see that the place furnished for a servant to work is reasonably safe is a positive obligation towards the servant, and the master is responsible for any failure to discharge that duty, whether he undertakes its performance personally or through another servant. The master cannot divest himself of such duty, and he is responsible as for his own personal negligence for a want of proper caution on the part of his agent." (42)

c. The duty to select competent employes is equally a primary one, the responsibility for which cannot by any other delegation of its performance be evaded. This is the universal rule. In one of the well-known cases the Supreme Court of Michigan has said: "This duty of due care in the employment and retention of competent servants is one the master cannot relieve himself of by any delegation, and if it becomes necessary to entrust its performance to a general manager, foreman or superintendent, such officer, whatever he may be called, must stand in the place of his principal, and the latter must assume the risk of his negligence. The same is true of the general supervision of his business; if there is negligence in this, the master is responsible for it; whether the supervision be by the master in person or by some manager, superintendent or foreman to whom he delegated it. In other words, while the servant assumes the risk of the negligence of fellow-servants, he does not assume the risk of negligence in the master himself, or in any one to whom the master may see fit to entrust his superintending authority." (43)

d. The clause requiring employers to keep their appliances and machinery in repair is perhaps in every state except Massachusetts just as imperative on them as to furnish suitable appliances in the beginning. Of course, the obvious limitation is, such repairs as must be made by some other person than the user or operator of the appliance or machine. Consequently, they cannot throw off or lessen their liability by delegating this duty to others. Says Justice Mitchell: "An employer is required not only to furnish reasonably safe and suitable tools and machinery, but by exercising such a continuing supervision over them, by such reasonably careful and skilful inspection and repair as will keep the implements which employes are required to use in such a condition as not unnecessarily to expose them to unknown and extraordinary hazards." (44)

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(41) Moyniham v. Hills Co., 146 Mass. 586.

(42) Hess v. Rosenthal, 160 Ill. 621; Chicago R. v. Swett, 45 Ill. 197; Chicago R. v. Jackson, 55 Ill. 492; Mobile & Ohio R. v. Godfrey, 155 Ill. 78.

(43) Quincy Mining Co. v. Kitts, 42 Mich. 39; citing Albro v. Agwam Canal Co., 6 Cush. 75; McAndrews v. Burns, 34 N. J. Law 117; Malone v. Hathaway, 64 N. Y. 9; Hard v. Vermont R., 32 Vt. 473.

Likewise the Supreme Court of Colorado (45) has declared that "agents charged with the duty of procuring safe machinery, or agents charged with the duty of inspecting and keeping machinery and appliances in suitable repair are not to be regarded as fellow-servants with those employed to labor in the business wherein such machinery or appliances are used, or, in some cases, even with those engaged to operate the same. The master is liable for injuries resulting without contributory negligence, to other servants, through the ordinary negligence of his employe or agents thus charged with the duty of procuring or repairing whether such negligence be in originally failing to purchase safe machinery or appliances, or in failing to keep the same in proper condition for use."

And more recently the same court has said that "it is the duty of an employer to make reasonable efforts to keep machinery and appliances used by his employes in suitable condition for use. This is one of the duties which he is bound to perform, and cannot be delegated, so as to exonerate him from liability to an employe injured by the negligence of a co-employe charged of such duty, in failing to do so; for the employe so charged is the representative of the employer, and not a co-servant with the one who sustains an injury by the negligent performance of such duty, and the act or omission of the employer in this respect is that of the employer, irrespective of the grade of the employe whose negligence caused the injury." (46)

It certainly is very illogical to hold that a person who selects a machine for an employer is not a fellow-servant with him who is to use it, and also to hold that when the machine becomes defective and a person is assigned to repair it and make it again fit for use that the repairer should be regarded as the fellow-servant of the person who is to use it, for the duty to make the machine fit is just as imperative as the duty to provide a fit machine in the beginning.

In every state, perhaps, except Massachusetts, the duty of repair is as much the employer's duty as that of furnishing proper appliances in the beginning. Consequently the persons who represent the master in making repairs are not fellow-servants with those who use the machinery. (47) Says the Supreme Court of Maine: "Those who are employed in the furnishing or repair of machinery and appliances are not fellow-servants of those who are employed in their use. To provide machinery and keep it in repair, and to use it for the purpose intended are very distinct matters. They are not employments in the same common business tending to the same common result. The one may properly be said to begin only when the other ends." (48)

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(44) Cincinnati R. v. McMullen, 117 Ind. 443; Louisville R. v. Buck, 116 Ind. 566.

(45) Wells v. Coe, 9 Colo. 159.

(46) Denver & Rio Grande R. v. Sipes, 26 Colo. 17, 23.

e. Though the duty to repair is regarded as the employer's duty which cannot be delegated, except as above mentioned, yet, in applying this rule the courts are not in harmony concerning the position of an inspector. Most of them regard his as doing the work of his employer the same as a supplier or repairer of appliances. Thus, in Tierney v. Minneapolis & St. Louis R., (49) the Supreme Court of Minnesota says: "If it is the duty of the corporation to exercise reasonable diligence to supply suitable and safe instrumentalities for the use of its servants to work with, it is also its duty to use like diligence to keep the same in proper repair. This necessarily involves inspection and examination as incident to the obligation to repair, and, as a corporation must necessarily act through agents, the negligence of its employes in the discharge of such a duty is attributable to the corporation."

Another application of this rule was made to a foreman engaged in repairing a railroad track. This was one of the instrumentalities of the road, which it was the duty of the corporation to keep in repair. When it entrusted the performance of this duty to a servant or agent he occupied the place of the corporation itself, and for his negligence the corporation was responsible. It was, therefore, liable to a man who, while working under him, was injured by the foreman's negligence. (50) By the logical application of this rule brakemen and car inspectors are not fellow-servants. (51)

In Michigan it was held at first that an inspector and brakeman were fellow-servants, the court declaring that it was not a duty of management or general supervision, but a task for which nothing was required but fidelity and mechanical knowledge of a comparatively limited kind. It was such work as would seldom be delegated to an officer of extensive responsibility who had other interests to look after. (52) At a later period, however, the court changed the rule and held that a car inspector was not a fellow-servant with a brakeman, (53) nor was a train dispatcher (54) nor an inspector of machinery a fellow-servant with the employes. (55)

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(47) Roax v. Lumber Co., 49 Mich. 60.

(48) Shanny v. Androscoggin Mills, 66 Me. 426.

(49) 33 Minn. 311.

(50) Drymala v. Thompson, 26 Minn. 40.

(51) Fox v. Railroad, 30 Minn. 231; Moey v. Railroad, 35 Minn. 200.

This rule has been applied in Texas. One of the cases was that of an engineer and fireman. The latter was injured by the parting of the engine from the tender. If it had been properly inspected the accident would not have happened, and the duty of inspection or examination was the employer's. It was delegated to the engineer who thus acted in a double capacity. The company was declared to be none the less liable. "Whatever negligence," said the court, "there may have been shown on the part of the engineer was the failure to inspect the engine and see that the coupling was in a safe condition, and as this was the duty of the defendant, the failure of the engineer to properly inspect would be the negligence of the defendant, and not of the engineer, a fellow-servant." (56)

This rule is in force in New York. Said Chief Justice Andrews, in Bailey v. Rome & Watertown: (57) "The duty of a railroad company to use reasonable care to protect its employes from injury while engaged upon its trains, embraces the objection to use reasonable care in furnishing suitable machinery in the first instance, and to keep it in repair so that their lives may not be exposed to unnecessary peril. The duty of proper inspection for the purpose of discovering defects which may arise from use is a part of the duty owing by the company to its servants." Inspectors, therefore, are not fellow-servants with the other employes of a company. Another application of the same principle has been made to train dispatchers. It is true that in one of the cases the lower court decided they were fellow-servants with those around them, but the Court of Appeals decided otherwise. (58)

The highest federal court regards a railroad inspector as a representative of his own company to inspect its cars, but he is a fellow-servant with a brakeman in inspecting foreign cars. (59) This is another application of the New York rule that the same person may act in two different capacities at the same time; he may represent his employer in directing men and render him responsible therefor, he may at the same moment act like a common workman, and in thus acting be negligent injure some one yet not inculpating his employer by the act, for this is done not representatively, but personally. Now, we perceive in the case of a car inspector the full beauty of the principle. In inspecting those of his own company he represents his master; in inspecting foreign cars he is acting as a fellow-servant with those around him. Trains are often composed of cars of varied ownership. An inspector does some negligent act in connection with the coupling of two cars, one belonging to his own company, the other to another company. In what capacity is the inspector acting in this transaction, as a representative or fellow-servant? To such an absurdity does this subtle distinction at last come? What a travesty on the law is the invention of such a rule for determining relations that ought to be so clear that ordinary men can understand them.

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(52) Smith v. Potter, 46 Mich. 258.

(53) Morton v. Railroad, 81 Mich. 423.

(54) Hunn v. Railroad, 78 Mich. 513.

(55) Van Dunn v. Letellier, 78 Mich. 492.

(56) Sabine & East Texas R. v. Ewing, 1 Texas Civ. App. 531; International & Gulf R. v. Ryan, 82 Texas 565; Gulf R. v. Wells, 16 S. W. 1025.

(57) 139 N. Y. 302, 305.

(58) Flike v. Boston & Albany R., 53 N. Y. 549.

(59) Northern Pacific R. v. Herbert, 116 U. S. 642.

f. That a train dispatcher represents his employer has been the uniform answer given by all the courts. Said the court in one of these cases: (60) "The rule, we think, does not sufficiently recognize the distinction between agents, managers and even superintendents, on the one hand, and mere servants and common laborers on the other, between duties which the master is required to perform and work which is ordinarily performed by employes. It makes little allowance for emergencies, and does not sufficiently regard the obvious fact that cases are constantly arising, especially in the operation of railroads, which no general rule can provide for, in which the master must be regarded as constructively present, and in which some one must be invested with a discretion and a right to speak and command in his name and by his authority. Such a right carries with it the corresponding duty of obedience; some one must hear and obey. To make no discrimination, but in all cases to please those who are invested with authority to direct and control on the same footing with those whose duty it is to merely perform as directed without discretion and with no responsibility, seems to us unwise and impolitic."

g. Lastly may be mentioned that part of the rule relating to instructions. The duty of giving these can in no wise be so delegated to another as to release the employer and transform the agent into a fellow servant. This rule has recently been again declared and applied by the Court of Errors and Appeals of New Jersey. (61)

6. Passing to the fifth rule, it may be briefly stated thus: An individual may serve as employe in the double capacity of vice-principal and mere employe at the same time. There is nothing inconsistent in regarding him as serving in a double capacity or function. Thus, in McElliott v. Randolph, (62) the court remarks:

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(60) Darrigan v. New York & New Eng. R., 52 Conn. 285, 305.

(61) Addicks v. Christolph, 62 N. J. Law, 786.

(62) 61 Conn. 157, 164.

"One may in some of his act be executing his master's duty towards the master's interests, while in others of his acts he is simply a fellow-servant, of the same or of a higher or lower grade; the master's responsibility or non-responsibility in case of injury is determined, not by the rank or grade of the offending servant, but by the character of the particular act or omission to which the injury is attributable."

The cases in which an employe may act in a dual capacity may be divided into two classes, those in which his double service arises from direct contract between the parties and those in which this relation is purely a judicial creation, having no origin in the thought or intention of the parties. Thus, an employer, as we have seen, must employ competent workmen, and even though he delegate the duty of hiring or selecting them to another, he is still responsible for the selections made as much so as though he had engaged them himself. Suppose, however, he should direct one of his ordinary employes or a foreman to hire men for him, such a man would henceforth be acting in a dual capacity, and when hiring men his employer would be responsible for his conduct, and when at work with the other men in his ordinary employment he would be simply one of them, a fellow-servant for whose conduct his principal would be no more responsible than for that of any other man in his employ.

Again, suppose an employer should appoint a locomotive engineer an inspector. In many states this is a duty of the employer and the responsibility for its performance cannot be delegated to another. In the states where this rule prevails, therefore, a locomotive engineer who also serves as an inspector acts in a dual capacity, and renders his employer responsible for his conduct when acting as an inspector while, on the other hand, he is not thus responsible when he is serving merely as an engineer.

Another illustration may be given. An absolute duty of an employer is to provide his servant "with a reasonably safe place to work in having, reference to the character of the employment in which the servant is engaged." (63) A foreman who is regarded as a fellow-servant may nevertheless assign places for those who are at work with him, and in so doing may represent his employer, and render him responsible if suitable places, such as the law requires the master to furnish, are not given to those working with him. Clearly the foreman, when assigning places for work represents the master otherwise the master would escape responsibility altogether.(64)

This class of cases, therefore, are easily enough distinguished in which the employer and employe create a dual service by express contract. But the law has also attempted to make this distinction, by declaring that when an employer appoints another to superintend and take charge of his entire business, or an entire branch of his business, he does not mean this quite, but simply he appoints him to do those things for which the employer is primarily responsible, and if he goes beyond these lines he acts as an ordinary employe, a mere fellow-servant with those around him, and for whose conduct his principal is no more responsible than for that of any other employe. The rule and reasons therefor have thus been expressed by Justice Rapallo, of the New York Court of Appeals: (65) "The liability of the master does not depend upon the grade or rank of the employe whose negligence causes the injury. A superintendent of a factory, although having power to employ men, or represent the master in other respects, is, in the management of the machinery, a fellow-servant of the other operatives. On the same principle, however low the grade or rank of the employe, the master is liable for injuries caused by him to another servant, if they result from the omission of some duty of the master which he has confided to such inferior employe. On this principle the Flike case was decided. (66) Chief Justice Church says: 'The true rule I apprehend is, to hold the corporation liable for negligence in respect to such acts and duties as it is required to perform as master, without regard to the rank or title of the agent entrusted with their performance. As to such acts the agent occupies the place of the corporation, and the latter is liable for the manner in which they are performed.' If an agent employs unfit servants, his fault is that of the corporation, because it occurred in the performance of the principal's duty, although only an agent himself. So, in providing machinery or materials, and in the general arrangement and management of the business, he is in the discharge of the duty pertaining to the principal."

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(63) Railroad Co. v. Peterson, 762 U. S. 346, 353.

(64) Baird v. Reilly, 92 Fed. 884; Grace & Hyde Co. v. Kennedy, 40 U. S. Cir. Ct. of App. 69.

In a case decided about ten years afterward (67) the rule was thus expressed by the Chief Justice: "It is not every act of a superintendent for which a master is liable, for notwithstanding his general supervisory power he is still a servant, and, in respect to such work as properly belongs to a servant to do is, while performing it, discharging the duty of a servant, for whose negligence and carelessness the master is not responsible to co-servants."

When the question was first before the court in the Crispin case the rule was established by a bare majority of one, three members strongly dissenting and voicing their opinion through Justice Earl. "The relation of one servant to another," said these dissenters,

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(65) Crispin V. Babbitt, 81 N. Y. 516, 518.

(66) 53 N. Y. 549.

(67) Hussey v. Coger, 112 N. Y. 616.

"is not determined by the fact that one has a superior position to the other, or has some control over other servants or some management of the business in hand. To place a servant in a position where the master will become responsible for his negligence to other servants, he must pro hac vice be in the place of the master, and his representative. In other words, to use a phrase found in some of the books, he must be the alter ego of the master. He need not, however, have all the powers of an absolutely general agent; but he must either be clothed with the general powers and charged with the general duties of the master, or he must, for the work in hand at least, be the superior whose commands are to be obeyed, whose acts are not to be questioned by the servants, and who thus, for the time being, represents the master. And whether a servant whose acts are complained of occupies such a position to other servants is a question to be determined. when disputed, upon sufficient evidence, by a jury.

"On the one hand, it is claimed that in determining the responsibility of the master in such case, we must look solely at the duties which were devolved upon the servant whose acts are complained of, and that if we find that the duty which he was engaged in discharging when he committed the negligent act or wrong was one of those absolute duties which the master owed to his servants, then the master is responsible, no matter what was the grade or position of the servant. On the other hand, I claim the rule to be that in determining the responsibility of the master for the negligent acts of his servant, we must look solely at the position of such servant, and we must consider the duties devolved upon him, solely for the purpose of determining such position, and if we find that he was the representative of the master, within the rule above stated, then the master must be held responsible for all his acts of negligence committed within the scope of his business entrusted to his hands, as well to co-servants as to strangers."

This decision was rendered in 1880; and at that time Justice Earl also asserted that he had made a thorough examination of the reported cases in this country and in England and could safely affirm that there was no case in which the question was involved where this dual relation had been recognized and the rule thus laid down.

The establishing of this dual relation in this second class of cases solely by judicial action is intended of course to limit the responsibility of employers to their employes. No one questions for a moment that whenever an employer treats an employe negligently he is responsible to him; is it not equally clear that when an employer appoints another to act wholly for him—either to conduct his entire business or an entire branch of it—he means to put him in his place and render it possible for him to do all that the principal can do himself? Does the principal intend either to appoint him to act in a dual capacity, or to confine his authority strictly to those matters for which he is absolutely responsible and cannot evade by any delegation to another. Nothing of the kind. Is an agent or superintendent forbidden by his terms of employment from doing anything that may be done by any ordinary employe? Certainly not. Would his employer blame him if he went beyond the strict limit of employing men, furnishing appliances, safe places for work, etc., described under the fifth rule in this chapter, to do some other act that would advance his employer's interest? Certainly not; such an act would, or ought to, meet his employer's approval.

Lastly, if an employer were thus rendered responsible for all the acts of his representatives done within the general scope of his master's employment (and no one will question that a master can act as the ordinary servant if he choose to do so) would the responsibility be an unreasonable one for him to bear? Says Justice Earl: "It is not too much for the master to be responsible for his superintendent's negligence. I can perceive no reason founded upon public policy, as there is none founded upon any principle of natural justice, for limiting the doctrine of respondeat superior in its application to the relation existing between a master and such an agent. The master should be responsible for all his negligence while engaged in his service, because he stands in his place, representing him as his alter ego; and I can perceive no reason founded on public policy or expediency for enforcing that doctrine in such a case in favor of strangers, which does not exist for enforcing it in favor of the other servants of the common master."

Nevertheless this rule is a part of the law of every state. Thus, in Michigan, the question of fellow-service, it is declared is not determined solely from the grade or rank of the offending or injured servant, but by the character of the act performed by the offending servant. The distinction, however, between the two classes above noted is not drawn, though it should be added that many of them have been decided in harmony with it and, consequently, rest on a solid basis of fact. In Maryland also, an employe may represent his employer in purchasing supplies and yet be a fellow-servant with others in performing other duties. (68) Whether, when the facts are ascertained, a party is a fellow-servant, or a deputy master or vice-principal, is a question of law. (69)

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(68) The distinction is clearly drawn in the case of State v. Malster, 57 Md. 287.

(69) Yates v. McCullough Iron Co., 69 Md. 370.

This rule is recognized in Illinois, and has been applied to a foreman while performing the duty of a servant. In such a case he is a fellow-servant, and another injured by his negligence is without redress. In another case the foreman of a section gang failed to warn the men of an approaching train, and it was held that with respect to this duty he represented his employer, and was not a fellow-servant with those working under him. And in another case it was distinctly held that if an act by a foreman causing injury related to his duty as co-laborer, the master was not responsible, but if it resulted from the authority conferred on him over co-laborers the master would be liable.

It will be readily seen that this rule may be one of difficult application. The case of Hussey v. Coger, before the New York Court of Appeals, (70) shows the difficulty in applying it. A man was employed as a superintendent to repair a vessel. He employed and discharged the workmen, regulated and directed the manner of their work, provided the means and appliances necessary to its prosecution, and determined the time and place for doing it. He was, therefore, regarded as standing in the place of his master. Nevertheless, although representing his employer in all these ways, it was possible for him to still act as a fellow-servant by doing the work of one of the employes, and this he attempted to do and so unskilfully that one of them was injured. Yet the master was held not liable because, in doing that particular thing he was acting as a fellow-servant, and not as the agent or representative of his master.

In the earlier case of Crispin v. Babbitt, (71) an employe in an iron works was injured through the negligence of the superintendent in letting on steam when he ought not to have done so. The court held that while he was the agent or representative of his employer in many of his acts, he was not in all; that when he did represent his employer his employer was thereby bound, but when he was not thus representing his employer his acts were to be regarded the same as those of any other fellow-servant and not binding on his employer.

The liability of his employer, therefore, for his acts, was made to turn not on his position, but on his acts. What test, then, can be applied, if any, to determine whether his acts are purely personal or representative. This is the test: "If the act is one pertaining to the duty the master owes to his servants, he is a representative of them for the manner of its performance. The converse of the proposition necessarily follows: If the act is one which pertains only to the duty of an operative, the employe performing it is a mere servant, and the master, although liable to strangers, is not liable to a fellow-servant for its improper performance."

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(70) 112 N. Y. 614.
(71) 81 N. Y. 516.

Though the ability of such an individual to act in a double capacity, a vice-principal when pursuing one course of action, and an employe when pursuing another is generally established, its unwisdom has been shown on more than one occasion. In a recent case in which it was applied, Justice Mestrezat said: "In the application of this rule the grade or rank of the servant for whose conduct the employer is sought to be made liable is not the test of the employer's responsibility. It is the character or nature of the act of the employe which causes the injury that determines the liability of the employer. If the act or thing done resulting in the injury to the employe was a duty imposed upon the employer, then the negligent performance of it by an employe of any grade will render the employer liable, but if such act was in the line of the ordinary workman's duty as an employe, then the employer is not responsible, though the offending employe was a vice-principal in charge of the work generally. This rule is sustained by reason and authority. It protects the employer from the act of the employe when not in the discharge of the duties of his principal, and gives redress to an injured employe for a negligent act which should have been performed carefully and properly by the employer." (72) This was applied to the foreman of a gang of workmen over whom he had full control, engaged in raising a stone. While doing the work the foreman took the place of a workman whose duty it was to hook an appliance to the stone for the purpose of raising it, and impatiently ordered the engineer to do his part. Before the stone was fully raised the tongs slipped out and the stone fell and injured one of the employes. The majority of the court held that in thus doing the work of a workman the foreman was not acting as a vice-principal, and, therefore, the consequences of his act, even though he had been negligent, could not be visited on his employer. But Justice Dean dissented: "The evidence," he declared, "of plaintiff tended to establish the fact that the foreman, under whose supervision this part of the work was being done, was there as the representative of and in the place of his employers, the defendants. On this evidence, under all the authorities, he was a vice-principal and his employers are answerable for his negligence. Why should not those who placed such a man in such a position, with all the unchecked powers of an employer, be held responsible for his negligence? He was no more a fellow-workman of plaintiff than the employers themselves. The tendency to exempt employers from just responsibility for the negligence of supervisors and bosses to whom they entrust such grave duties, is, in my opinion, too pronounced and will lead to consequences, which, if not now clearly foreseen, can, with very reasonable certainty, be conjectured.' Surely, if an employer ought not to be held liable for the negligence of a vice-principal, when he steps out of his proper limit, and serves as an employe, he ought to be held liable on the ground that his vice-principal was incompetent in not knowing his proper place and keeping within it. For, if in so acting he is transgressing his duty, he thereby furnishes the clearest evidence that he does not understand what his duty is. It is true that there are some cases in which an employe may thus act in a double capacity, a locomotive engineer as an inspector. And when he is thus acting a negligent act as an engineer ought not to be charged against his principal. But a superintendent, for example, in charge of men, who, as in the case just mentioned, acts with them, ought to be regarded as a superintendent in whatever he may do while executing his authority. And if he transcends it, those with whom he is working are ignorant of the fact, why then should they be visited with the ill consequences?

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(72) Ricks v. Flynn, 196 Penn. 263.

The decision in this case shows how easy it is for a court to fritter away a useful and just rule. In all these cases of dual employment, the servant acts in a far more important capacity in one employment than in the other. So true is this that it may be said of him that his employment in the one way is his principal employment, in the other as an incident. In determining all these cases this should be kept in view, for whichever be his principal employment the court should be slow to ascribe any act to the other unless it is clearly of this character. Thus, a railway engineer may act as an inspector and, when thus acting, represents his principal; but evidently his work as an engineer is his principal and far more important employment, and, therefore, every act done by him not clearly as an inspector should be considered as done by him as a mere employe and fellow-servant. On the other hand, a superintendent might act as a mere employe, but in every act of his he should be regarded as acting for his employer and representing him in so doing, unless it is very clear that he is acting otherwise.

This principle of construction seems to have been well learned by the Supreme Court of Massachusetts. Such havoc was made by the court in holding foremen and superintendents to be fellow-servants, and not representatives of their employes, that the legislature was at last compelled to rescue it from destruction by declaring that such employes represent their employers and are not to be regarded as fellow-servants. Since the enactment of this statute it has been wisely construed by the court, and while it is still held that a superintendent may sometimes act as a mere employe, holding the relation to others of fellow-servant, every little act of his not strictly within the line of his duty is not regarded as the act of a mere employe, but is regarded, as it ought to be, a mere incident of his larger employment as an agent or representative of his employer. (73)

Again, it is a familiar principle that if an injury happens to an employe while doing anything, outside his strict line of employment, he can recover nothing therefor, however meritorious his act may be. If he is asked by another employe to aid him for a moment in doing some needful thing and he yields to the request and is injured, he can recover nothing for he was not employed to aid the other. But surely a rule which is construed so strongly against employes where they are technically in the wrong, ought to be construed just as strongly against employers when they have technically at least transgressed their line of duty. And when they have employed others to act for them and who do represent them in their most essential conduct, it is a strange shrinking of the rule to say that in some minor matter they were not employed to perform it and that, in doing so, they acted as a mere employe and, therefore, as a fellow-servant. Would it not be much nearer the truth in most of these cases to say that if he did not represent his employer when thus acting, he was a trespasser, for his employer did not hire him to act in this manner at all. In many cases the facts have shown that he was standing by and becoming impatient with the slowness or lack of skill displayed by those around him, joined them, and, while working, caused injury to one or more of the number. Is it not the literal truth to say that in all these cases he was not employed to act as a workingman at all, and he was not, therefore, one of them, but a trespasser? But is not the more reasonable way to regard these minor acts in many cases as mere incidents of the representative's conduct, and as such to hold his employer responsible therefor.

Lastly, the fact should not be overlooked that in many of the cases of dual service, the double relationship is an artificial one established by the courts and having no origin whatever in the thought, imagination, action or intention of the parties.

It may be added, however, that where an employer has an absolute duty to perform, the doing of which can be delegated, but the responsibility cannot be, the responsibility clings to him just as closely in cases in which he delegates an ordinary employe to perform it as in any others. The delegate may still be an employe with respect to everything done except the one particular act, or series of acts he is directed to do, for and in the place of his employer, but in doing this one or series, he just as truly represents him as though he were doing no other. In the way of illustration may be cited a very recent case relating to the place in which an injured workman was employed, and the court remarks that "the duty of exercising reasonable care in furnishing to a servant a reasonably safe place to work is that of the master, and he cannot delegate this duty to a subordinate without placing such subordinate in his own position, and binding him to perform the same duties devolving upon the master." (74) And the reason for thus holding him as the representative of his master is that otherwise the master would escape his liability altogether. The law, therefore, does not permit him, under the guise of using an ordinary employe to act for him, to escape from a responsibility that cannot in any way be transferred to another.

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(73) Malcolm v. Fuller, 152 Mass. 160; Crowley v. Cutting, 165 Mass. 436.

7. The sixth rule is, an individual who has authority to hire, direct or control, pay and discharge men for another is his representative, and not a fellow-servant. But an individual who has authority to direct or control, pay and discharge men for another is in some states his representative; in others, he is not.

The same person may act in the dual capacity of employing persons—in which he acts as an agent—and may direct their employment, pay and discharge them, in which case he is merely acting as one of their number, and is, therefore, a fellow-servant. Thus, in Indiana, a section foreman of a railroad, with power to employ and discharge section hands, is a vice-principal when employing and discharging them, but is simply a fellow-servant with them in his control of them afterward. "The foreman," so the court has remarked, "was a vice-principal in the matter of hiring and discharging hands, for the master owes it as a duty to exercise reasonable care not to employ any but careful men, and to discharge those who prove to be negligent. But it was not so in transporting the men to and from their work. In the matter of moving the hand car and their tools to and from the locality at which they worked upon the track, they were in the discharge of a duty which they owed the master and were, therefore, fellow-servants." (75)

In those cases in which this distinction does not exist a person who is authorized to employ, direct, pay and discharge employes is an agent and not a fellow-servant. And this is also the law in Indiana in all those cases in which his dual action is not recognized. We need not stop here to consider whether the essence of the employer's liability by this rule lies in the fact that, as we have seen, the employment of servants is a cardinal duty which may indeed be performed by another, but without lessening his responsibility, or whether it lies in the fact that through another he directs their movements and, therefore, ought to be responsible for their safety. The rule itself, however, in all cases in which no distinction is made between employment and control, exists everywhere, and is indeed only an extension of the second rule and also of a branch of the fourth.

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(74) Ellis v. Northern Pacific R., 103 Fed. 416, 417.

(75) Justice v. Pennsylvania Co., 130 Ind. 321; Wilson v. Madison R., 18 Ind. 226; Ohio R. v. Tindall, 13 Ind. 366; Slattery v. Toledo R., 23 Ind. 81; Sullivan v. Toledo R., 58 Ind. 26; Gormley v. Ohio R., 72 Ind. 31; Robertson v. Terre Haute R., 78 Ind. 77; Indiana Car Co. v. Parker, 100 Ind. 181; Pittsburg R. v. Adams, 105 Ind. 151; Boyce v. Fitzpatrick, 80 Ind. 526; Capper v. Louisville R., 103 Ind. 305.

Concerning this rule, the Supreme Court of Illinois, in a railroad case, (76) thus remarks: "A servant having the exclusive control over other servants under a common master, including the hiring and discharging is, in the exercise of those powers, the representative of the master, and not a mere fellow-servant. The mere fact, however, that one of a number of servants who are in the habit of working together in the same line of employment for a common master has power to control and direct the actions of the others with respect to such employment will not of itself render the master liable for the negligence of the governing servant, resulting in an injury to one of the others, without regard to the circumstances. On the other hand, the mere fact that the servant exercising such authority sometimes or generally labors with the others as a common hand, will not of itself exonerate the master from liability for the former's negligence in the exercise of his authority over others. Every case in this respect must stand upon its own circumstances. If the negligence complained of consists of some act done or omitted, by one having such authority, which relates to his duty as a co-laborer with those under his control, and which might just as readily have happened with one of them having no such authority, then the common master will not be liable; but when the negligent act complained of arises out of, and is the direct result of the exercise of the authority conferred upon him by the master over his co-laborers, the master will be liable. To illustrate the rule, when a railway company confers upon one of its employes authority to take charge of and control a gang of men in carrying on some particular branch of its business, he is the direct representative of the company, and all commands given by him within the scope of his authority are in law the commands of the company. The fact that he may have an immediate superior standing between him and the company makes no difference in this respect. In exercising the power, he does not stand on the same plane with those under his control. His immediate superiors to influence the conduct of the laborers in that department." (77)

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(76) Chicago & Alton R. v. May, 108 Ill. 288, 298.

This has been applied in Texas on several occasions, and on one of them to a master mechanic who was in charge of a round-house belonging to a railroad company. (78) "Having the power to employ and discharge the hands, such agency and powers constituted him the vice-principal of the company. He was in place of the master." The same principle has been applied to a temporary foreman who had charge of men engaged in building a bridge. (79)

This rule exists in Missouri. "Where the master," says the Supreme Court, "gives to a person power to superintend, control and direct the men engaged in the performance of work, such person is, as to the men, under him, a vice-principal, and it can make no difference whether he is called a superintendent, conductor, boss or foreman. For his negligent acts and omissions in performing the duties of the master, the master is liable. This principle of law has often been asserted by this court and applied under a variety of circumstances." (80) In applying this rule, therefore, a yardmaster who hires and directs men is not a fellow-servant with a switchman. (81) Again, a servant who has full charge of the master's work and of the men employed is a vice-principal, (82) or entire charge of the selection and materials and construction of a building. (83) Indeed, the power to employ or discharge men is a proper test, for the first is emphatically a function of the employer. One who can do this is not a fellow-servant with those employed under him, in so far at least as he is performing the duty of his employer. (84)

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(77) Chicago & Alton R. v. Hoyt, 122 Ill. 369.

(78) Mo. Pacific R. v. Sarse, 22 S. W. Rep. 187; Railway Co. v. Smith, 76 Texas 612; Railroad Co. v. Williams, 75 Texas 4; Nix v. Railway Co., 82 Texas 474.

(79) St. Louis R. v. Lemon, 83 Texas, 143.

(80) Brothers v. Cartter, 52 Mo. 372; Gormley v. Iron Works, 61 Mo. 492; Wheeler v. Centenary Church, 62 Mo. 326; Church v. Railroad, 85 Mo. 588; Stephens v. Railroad, 86 Mo. 221; Hoke v. Railroad, 88 Mo. 360; Tabler v. Railroad, 93 Mo. 79; Dayharsh v. Railroad, 103 Mo. 570; Miller v. Mo. Pacific R., 109 Mo. 350.

Colorado: Denver R. v. Driscoll, 12 Colo. 520; Colorado Midland R. v. O'Brien, 16 Colo. 219; Lautry v. Silverman, 1 Colo. App. 404.

Iowa: Troughear v. Lower Vein Coal Co., 62 Iowa 576; Hathaway v. Des Moines, 97 Iowa 333.

Illinois: Chicago & Alton R. v. May, 108 Ill. 288.

Indiana: Louisville R. v. Graham, 124 Ind. 80; Nall v. Railroad, 129 Ind. 260; Taylor v. Evansville R., 121 Ind. 124; Hoosier Stone Co. v. McCain, 133 Ind. 231.

Louisiana: Mattise v. Consumers' Ice Mfg. Co., 46 La. Ann. 1535.

Michigan: Brown v. Gilchrist, 80 Mich. 56; Lyttle v. Railroad, 84 Mich. 289; Slater v. Chapman, 67 Mich. 526; Palmer v. Railroad, 93 Mich. 363.

Montana: Kelley v. Mining Co., 16 Mont. 484; Goodwell v. Montana Central R., 18 Mont. 293.

North Carolina: Dobbin v. Richmond R., 81 N. Car. 446; Turner v. Goldsboro Lumber Co., 119 N. C. 387.

Oregon: Anderson v. Bennett, 16 Or. 515.

Pennsylvania: Mullan v. Steamship Co., 78 Pa. 25.

South Carolina: Whaley v. Bartlett, 42 S. Car. 454.

Texas: Texas R. v. Whitmore, 58 Texas 276; Gulf R. v. Wells, 16 S. W. 1025; Douglass v. Texas Mexican R., 63 Texas 564; Mo. Pacific R. v. Williams, 75 Texas 4; Texas R. v. Nix, 23 S. W. Rep. 328.

Utah: Reddon v. Union Pacific R., 5 Utah, 344; Anderson v. Ogden Union R., 8 Utah 128.

But even this rule is denied in Massachusetts. (85) The extreme position of the court, however, has been narrowed by the legislature, for a superintendent of a factory who is entrusted with authority to hire, direct and control the operatives is no longer regarded as a fellow-servant, but as representing his employer. (86)

8. The seventh rule is, a person with authority to control the employment of men, their mode of work, is a vice-principal. Of course, the sixth rule is a stronger test and includes all the cases that are included in the rule under consideration. On the other hand, control alone in some states is not a sufficient test of primary authority. But where it is, the reasoning is cogent. It is said that accidents grow out of the control or direction of men, and, therefore, if one controls them he ought to stand for the principal as clearly as though he hired or discharged them. One of the best expressions of this rule that we have seen is by the Supreme Court of West Virginia: "At one time," the court remarks, "it was held that to make the master responsible, he must have entrusted this superior servant with the actual control of his business, made him alter ego. It was subsequently held that the superior servant must have power to employ and discharge the inferior servant. But now it seems to be considered sufficient that the inferior servant

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Washington: Zintek v. Stimson Mill Co., 9 Wash., 395; McDonough v. Great Northern R., 15 Wash. 244.

Wisconsin: Schultz v. Railroad, 48 Wis. 375.

Federal: Baltimore & Ohio R. v. Baugh, 149 U. S. 368; Northern Pacific R. v. Peterson, 162 U. S. 346; Woods v. Lindvall, 48 Fed. 62; Baltimore & Ohio R. v. Camp, 31 U. S. App. 213.

(81) Lyttle v. Railroad, 84 Mich. 289.

(82) Slater v. Chapman, 67 Mich. 526.

(83) Brown v. Gilchrist, 80 Mich. 56.

(84) Palmer v. Railroad, 93 Mich. 363.

(85) Albro v. Agawam Canal Co., 6 Cush. 75; Holden v. Fitchburg R., 129 Mass. 268.

(86) Malcolm v. Fuller, 152 Mass. 160; Crowley v. Cutting, 165 Mass. 436; Gardner v. New England Tel. Co., 170 Mass. 156.

is under the control and subject to the orders of the superior servant." (87)

Many states have not adopted a seventh rule, that if one has the power to control the employment or services of men, he is a vice-principal. This would seem to be enough, if the other rule is rational, for the reason that his care or negligence springs from directing those under him far more than in hiring them. The paying and discharging of men are acts which do not bear on the question of negligence in serving. Where his dual capacity is recognized, then, indeed, his act in hiring becomes important, and he might involve his master by hiring an incompetent servant. Letting this point go for the present, is it not evident that the test of control ought to suffice, while any additional acts that might be done by a foreman or superintendent ought to clinch still more strongly his relationship to his principal?

Let us note some of the applications of this rule. In one of them a foreman was in charge of a gang of men with power to command where and when and how they should work. He was held to be a vice-principal, even though he had no power to hire or discharge them. (88) In another case the rule was applied to a foreman or boss of a hand crew who put one of them in a dangerous place to work. He, too, was held to be a vice-principal. (89) In another, a foreman in charge of a round house was held to be a vice-principal. (90) Likewise a yardmaster having power to hire and discharge employes was not a fellow-servant with a switchman employed there; (91) nor was the foreman of a gang engaged in unloading a car under his direction a fellow-servant with them; (92) nor a foreman in charge of laborers moving the roof of a railroad company's building; (93) nor is a section foreman a fellow-servant with section men under his orders. (94)

This modification of the rule was adopted from the first by the Ohio and Kentucky courts. "It may be said generally that the only case where the old rule has not been impugned is where the servants are so far working together as to be practically co-operating, and to have opportunity to control or influence the conduct of each other, and have no superiority one over the other. Since the rule grew up as judicial legislation, the courts may properly qualify or limit it to avoid injustice in particular cases. But the rule seems to be now very generally adopted and applied by the courts of this country." (95)

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(87) Madden v. Chesapeake & Ohio R., 28 W. Va. 610, 618; Brothers v. Cartter, 52 Mo. 372; Malone v. Hathaway, 64 N. Y. 5; Willis v. Oregon Co., 11 Or. 257; Cowles v. Richmond R., 84 N. Car. 309; Lalor v. Chicago R., 52 Ill. 401; Chicago R. v. Lundstrom, 16 Neb. 254; Hough v. Railroad, 100 U. S. 216; Northern Pacific R. v. Herbert, 116 U. S. 642.

(88) Hall v. St. Joseph Water Co., 48 Mo. App. 356; Cox v. Syenite Granite Co., 39 Mo. App. 424.

(89) Banks v. Railroad, 49 Mo. App. 458.

(90) Dayharsh v. Railroad, 103 Mo. 570.

(91) Taylor v. Railroad, 16 S. W. Rep. 206.

(92) Higgins v. Railroad, 43 Mo. App. 547.

(93) Sullivan v. Railroad, 107 Mo. 66.

(94) Schroeder v. Railroad, 108 Mo. 322.

"Consequently, an engineer on one train of a railroad company who is injured by the negligence of the conductor of another train of the company running in an opposite direction, or by the fault of one of the company's telegraphic operators in transmitting a telegraphic order to such conductor, the engineer being wholly without fault or the means of preventing such negligence or of avoiding its consequences, he is not the fellow-servant of the conductor, nor of the operator." (96)

In Grady v. Kansas City Railroad, (97) Justice Miller, of the United States Supreme Court, sat as judge of the Circuit Court. The plaintiff was engaged with half a dozen other men, under the control of a foreman, in taking up and re-laying one of the tracks in this yards. A switch engine usually employed in transferring cars from one track to another struck one of the men who was at work replacing rails. Justice Miller said: "The question is one which has been much considered of late in the courts of last resort in the states, and much discussed at the bar in these and in inferior courts. There is no unanimity in the decisions of the courts, nor in the opinion of the profession. After re-examining the matter, as I have done, in the light of these decisions and of sound principle, to the best of my ability, to understand what that may be in this connection, I remain of the opinion that a common hand engaged in the business of distributing iron rails along the side of a track, to be laid in place of other rails removed from the track, and under the control, with six or eight other men, of a boss or foreman, is not in the same employment as a man controlling and managing a swith-engine not used in carrying these rails, but in moving and transferring from one place to another cars not engaged in the business of re-laying said track."

This was in 1885. The next year Van Wickle v. Manhattan Railway Co., (98) was tried in the second circuit in which a track repairer was held to be a fellow-servant with an engineer. The court, Judge Coxe, significantly remarked: "It cannot be denied that the rule which exempts the master from liability in such cases is being gradually relaxed so as to permit recoveries in many cases which would have been promptly determined a few years ago.

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(95) Railroad Co. v. Fort, 17 Wall. 559.

(96) Madden v. Chesapeake & Ohio R., 28 W. Va. 618.

(97) 25 Fed. 258.

(98) 32 Fed. 278.

Indeed, it may be said that the tendency of many recent decisions, notably Garrohy's case, (99) is to restrict it to such narrow limits that practically it exists in name only. Recognizing the marked lack of unanimity among the decisions, it may still be confidently affirmed that the proposition that persons holding the relations that the plaintiff and the engineer held to each other, are fellow-servants is maintained by a great preponderance of authority. Whether the reasons which brought the rule into being require that it should still be maintained, may well be doubted, but it is entirely clear that so far at least as this circuit is concerned, the rule is still recognized and enforced." (100)

One of the earliest cases in which the rule was established was Keary's, by the Supreme Court of Ohio. (1) "An agent or officer," it was declared, "entrusted with the control of his subordinates and the operations of the business is not engaged in a common service with them, nor is he in any just sense their fellow-servant. Their employments are distinct, although both are necessary for the successful prosecution of the business." This was applied to a conductor who was held not to be a fellow-servant with the brakeman of the same train, and who had been injured by the conductor's negligence. A lengthy opinion was rendered by Justice Rainey, one of the most elaborate ever rendered on this difficult question. Further, the judge remarked, the company commissions the conductor "to exercise that dominion over the operator of the train which essentially pertains to the prerogatives of the owner; and in its exercise he stands in the place of the owner, and is in the discharge of a duty which the owner, as a man and a party to the contract of service owes to those placed under him, and whose lives may depend on his fidelity. His will alone controls everything, and it is the will of the owner that his intelligence alone should be trusted for this purpose. This service is not common to him, and the hands placed under him. They have nothing to do with it. His duties and their duties are entirely separate and distinct, although both are necessary to produce the result. It is his to command and theirs to obey and execute. No service is common that does not permit a common participation, and no servants are fellow-servants when one is placed in control of the other."

This may be regarded as the extreme form of the doctrine in one direction.

In the case of Little Miami R. v. Sterns, (2) the court said: "From the very nature of the contract of service between the company and the employes, the company was under obligation to them to control and superintend with skill and care the dangerous force employed, upon which their safety so essentially depended. For this purpose the conductor is employed, and in this indirectly represents the company. They contract for and engage his care and skill. They commission him to exercise that dominion over the operatives of the train which essentially pertains to the prerogatives of the owner, and in its exercise he stands in the place of the owner, and is in the discharge of a duty which the owner, as a man and a party to the contract of service, owes to those placed under him, and whose lives depend upon his fidelity. His will alone controls everything, and it is the will of the owner that his intelligence shall be trusted for this purpose. This service is not common to him and the hands placed under him. They have nothing to do with it. His duties and their duties are entirely separate and distinct, although both are necessary to produce the result. It is his to command and theirs to obey and execute. No service is common that does not admit a common participation, and no servants are fellow-servants when one is placed in control over the other." And this rule, thus early adopted, has been preserved. (3) By this rule, therefore, a brakeman and conductor are not fellow-servants; (4) nor is a conductor and trackman, (5) nor is a foreman a fellow-servant with a repairer of cars, (6) nor is a section man on a construction train a fellow-servant with a train man. (7)

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(99) 25 Fed. 258.

(100) The court cited Randall v. Railroad, 109 U. S. 478; Boldt v. Railroad, 18 N. Y. 432; Coon v. Railroad, 5 N. Y. 492; Vick v. Railroad, 95 N. Y. 267; Brick v. Railroad, 98 N. Y. 211; Quinn v. Ligtherage Co., 23 Blatchf. 209.

(1) 3 Ohio St. 201.

(2) 20 Ohio 415.

This rule is applied in Kentucky. Consequently, "a subordinate in the same service can recover for the negligence of agents who have the right and power to direct and control him, or who are his superiors with reference to the discharge of the duties pertaining to the work." (8)

In Louisiana this rule is enforced. In Farren v. Sellers & Co., (9) the court declared that the master was responsible for the negligence of a servant who stands as his vice-principal and direct representative invested with his own authority over inferior servants, and that the latter, when injured by such negligence, are not bound by the doctrine of fellow-servant.

Shortly before, the same court had occasion to apply the rule in the Ross case, in which the United States Supreme Court decided that a railway conductor represented his employer and was not, therefore, a fellow-servant with the engineer, brakeman or other employes engaged in running a train. When applying the rule thus established, the Louisiana court remarked that no doubt this principle might receive extension to other relations between officers having the right to command and subordinates subject to such command. (10) Notwithstanding this rule a brakeman and engineer are regarded as fellow-servants. (11) This, however, is no paring away of the rule, for they have always been thus considered except when engineers have also acted in the additional capacity of conductors. This is not infrequent when they serve on freight trains, and it has been generally held that where conductors are regarded as vice-principals, engineers are also regarded in the same manner when they serve in that capacity. (12)

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(3) Berea Stone Co. v. Kraft, 31 Ohio St. 291.

(4) Lake Shore R. v. Spangler, 8 N. E. Rep. (Ohio) 467.

(5) Dick v. Railroad, 38 Ohio St. 389.

(6) Lake Shore R. v. Lavelley, 36 Ohio St. 221.

(7) Columbus R. v. O'Brien, 4 Ohio Cir. Ct. 515.

(8) Louisville & Nashville R. v. Collins, 2 Duv. 117; Louisville & Nashville R. v. Carvens, 9 Bush. 566.

(9) 39 La. Ann. 101.

In Tennessee this rule prevails, and has been applied to a section boss who is declared to be not a fellow-servant with those working under him; (13) nor is the conductor or engineer in charge of a train a fellow-servant with the fireman or employes on the train; (14) nor a telegraph operator a fellow-servant with the conductor of a train. (15) Contrary to the general rule, however, a brakeman and car inspector are fellow-servants. (16)

In Arkansas this rule prevails and was applied in Bloyd v. Railroad Co., (17) in which an elaborate opinion was delivered on the question: "In some of the adjudged cases," Justice Mansfield remarks, "the distinction between the relations indicated by the words foreman and vice-principal is apparently made to depend more upon the extent or magnitude than upon the nature of the work of which the offending servant has charge. Other courts, proceeding upon what we think a sounder principle, have attached no importance to the extent of the work, but have considered only whether it was such as required a skilful or careful supervision, and where such supervision was necessary to the safety of the laborers engaged upon the work, they have held it was the master's duty to bestow it, and that if he appointed an agent to perform that duty he was responsible for his negligence." After citing from the Ross case, the court thus continued: "The rule established by that case, as it has been generally understood and applied by the Federal courts is, that the relation of fellow-servants should not be deemed to exist between two employes, where the function of on is to exercise supervision and control over some work undertaken by the master, which requires supervision, and over subordinate servants engaged in that work, and where the other is not vested by the master with any such power of direction or management." (18) The court from whose opinion this quotation is made has declared in another case that the rule as thus understood is right in principle and is supported by the weight of authority. (19) In opposing the doctrine of the same case a text writer of authority says: "What is the special attribute of the master? Is it the mere fact that he provides materials for the work, or that he selects the servants? Is it not, more than anything else, that in him is vested the right and duty of giving orders, and directing what work shall be done, and how it shall be done? If the master chooses to delegate this authority to some one else, on what possible principle can he be allowed to relieve himself from the responsibility of having proper orders given." By another text writer the rule of the Ross case is styled "the rule of humanity and justice." In this case, therefore, the foreman of a squad of railroad workmen, with authority to repair and build bridges, to employ and discharge the men, and to direct their work, was declared to be the vice-principal and representative of the company.

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(10) Towns v. Vicksburg R., 37 La. Ann. 630.

(11) Id.

(12) But see the later case of Mattise v. Consumers' Ice Mfg. Co., 46 La. Ann. 1535.

(13) Louisville & Nashville R. v. Lohr, 86 Tenn. 335.

(14) East Tenn. R. v. Collins, 85 Tenn. 227.

(15) Nashville & Louisville R. Whelen, 10 Lea. 351.

(16) Nashville & Louisville R. v. Foster, 10 Lea. 351.

(17) 58 Ark. 66.

This rule applies in Nebraska. Says Chief Justice Cobb: "I think the law established and laid down in Ohio prevails substantially throughout the western states, and will ultimately prevail everywhere." (20)

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(18) Northern Pacific R. v. Peterson, 4 U. S. App. 579.

(19) Woods v. Lindvall, 4 U. S. App. 62.

(20) Chicago & Northwestern R. v. Lindstrom, 16 Neb. 254, 261; Burlington R. v. Crockett, 19 Neb. 138; Sioux City v. Smith, 22 Neb. 775.

Georgia: Atlanta Cotton Factory Co. v. Speer, 69 Ga. 137; Blackman v. Thomson-Houston Electric Co., 102 Ga. 64; Taylor v. Ga. Marble Co., 99 Ga. 512; Spencer v. Brooks, 97 Ga. 681.

Idaho: Palmer v. Utah R., 2 Idaho 290.

Kansas: Mo. Pacific R. v. Peregoy, 36 Kan. 424; Walker v. Gillett, 1898, 59 Kan. 214; Kansas City Car Co. v. Sechrist, 54 Pac. Rep. 688; Atchison R. v. Carter, 55 Pac. Rep. 279.

Kentucky: Volz v. Chesapeake & Ohio R., 95 Ky. 188; Newport News R. v. Carroll, 31 S. W. Rep. 132; Louisville R. v. Brooks, 83 Ky. 129; Louisville R. v. Moore, 83 Ky. 675.

Missouri: Stephens v. Hannibal & St. Joseph R., 86 Mo. 221; Bradley v. Chicago R., 138 Mo. 293; Moore v. Wabash R., 85 Mo. 588; Miller v. Mo. Pacific R., 109 Mo. 350.

North Carolina: Dobbin v. Richmond R., 81 N. C. 446; Kirk v. Atlanta R., 94 N. C. 625; Turner v. Goldsboro Lumber Co., 119 N. C. 387.

Ohio: Mad River R. v. Barber, 5 Ohio St. 541; Lake Shore R. v. Knittal, 33 Ohio St. 468; Lake Shore R. v. Spangler, 44 Ohio St. 471; Cleveland R. v. Keary, 3 Ohio St. 201.

The most noteworthy application of this test was by the United States Supreme Court in the case of an engineer named Ross, in the employ of the Chicago, Milwaukee and St. Paul Railroad, who was injured through the negligence of the conductor of his train. (21) It collided with another, and he had neglected to give the engineer an order for the running of his train, as the rules of the company required. The engineer sued the company and it sought to shield itself behind the rule that the engineer and conductor were fellow-servants. What answer did the court make?

The opinion was given by Mr. Justice Field. He began by inquiring, "What is essential to render the service in which different persons are engaged a common employment?" He remarked that the question had caused great conflict of opinion and then described how far the English courts had gone in sweeping men employed by the same person into the same class as co-fellow-servants. One of these cases, which perhaps had gone further than any other in this country, was Holden v. Fitchburg Railroad, decided by the Supreme Court of Massachusetts, (22) in which the court held that an employe could not maintain an action against his employer for an injury caused by the fault or negligence of another employe, even though the two were not working in company, nor had any opportunity to control or influence the conduct of each other. Indeed, the rule that they were fellow-servants extended "to every case in which the two, deriving their authority and their compensation from the same source, are engaged in the same business, though in different departments of duty." Accordingly, it was held in that case, that a corporation was not liable to a brakeman on one of its trains for injuries suffered from the negligent setting up and use of a derrick by workmen employed in widening the railroad, on the old ground, forsooth, that he was a fellow-servant with those employed about the derrick.

After this introduction, Justice Field took up the immediate question. He remarked that there was a clear distinction between servants of a corporation that exercised no supervision over others engaged with them in the same employment, and its agents who

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South Carolina: Gunter v. Graniteville Mfg. Co., 18 S. C. 262; Jenkins v. Richmond R., 39 S. C. 507.

Tennessee: Nashville R. v. Whelers, 10 Lea 741; Nashville R. v. Handman, 13 Lea 423; Hopkins v. Nashville R., 96 Tenn. 409; Louisville R. v. Lohr, 86 Tenn. 385; Louisville R. v. Kenley, 92 Tenn. 207; Coal Creek Mining Co. v. Davis, 90 Tenn. 711; Illinois Central R. v. Spence, 93 Tenn. 173.

Utah: Armstrong v. Short Line R., 8 Utah 420. In this case the court announced that the former rule had been changed. But see Allen v. Logan City, 10 Utah 279.

(21) 112 U. S. 377.

(22) 129 Mass. 271.

were clothed with the control of a distinct department. "A conductor, having the entire control and management of a railway train, occupies a very different position from the brakeman, the porters and other subordinate employed. He is, in fact, and should be treated as the personal representative of the corporation, for whose negligence it is responsible to subordinate servants."

Justice Field then reviewed several cases in which this opinion had been declared by the state courts, dwelling at length on the Keary case, decided by the Supreme Court of Ohio, which we have already noticed. Four judges dissented, however, so that the rule was adopted by a bare majority of the court. As soon as it was announced friends and critics quickly rose to the surface. It was clearly contrary to the prevailing view in many states, yet the rule was deemed just and wise by many who understood its far-reaching importance.

The state courts had not long to wait for an opportunity to use the Ross decision as an authority in support of their rulings, or to frown upon it. By several courts the opinion was regarded with favor. The Supreme Court of North Carolina was one of the first to give utterance. The occasion was the review of the case of Mason against the Danville Railroad. (23) The court boldly said that the Ross case contained "the clearest and most philosophical discussion of the subject," who are servants engaged in a common employment, "to be found in any authority to which we have had access." The view of a conductor's relation to his employer "seems to us a reasonable and just one, and it will insure care in the selection of such agents, and thus give greater security to the servants engaged under him in an employment requiring the utmost vigilance on their part and prompt and unhesitating obedience to his orders."

In Louisiana the Supreme Court, after regarding the decision with favor, depressingly remarked that "in matters of this kind where one enters upon the study of the infinite number of decisions which had been rendered by a multitude of courts, he encounters a maze of contradictory decisions and an infinite variety of qualifications which stupefy the mind and render it impossible to reach a conclusion consistent with them all. No doubt, added the court, "this principle might receive extension to other relations between officers having the right to command subordinates subject to such command." (24)

In South Carolina the Supreme Court strongly supported the rule in Ross' case, the court remarking: "It seems to us clear that unless the conductor of a railroad train is, while in charge of the train, the representative of the company, then the train is being run without any representative. He has entire charge of the train and every employe on it is subject to his orders.

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(23) 111 N. C. 482.

(24) Towns v. Vicksburg R., 37 La. Ann. 630, 634.

The Ross decision was also supported by the Supreme Court of Colorado. The case calling for an application of the rule related to a superintendent or foreman engaged in extending a railroad, who had negligently injured one of the men employed under him. The foreman had changed the tools and cars used in doing the work and employed and discharged the men. The court remarked that in no proper sense of the term was he a fellow-servant with the injured employe. "The company had placed him in charge of the work, with full direction to control and supervise it, and he must be treated in reference to this work as its representative—as vice-principal. The company is answerable to all the under-servants for the negligence of such a representative while acting within the scope of his employment." (25)

In Virginia this question has arisen several times since the decision in the Ross case, and the rule has been approved. In one of them, while a train was still the conductor required a brakeman to get on a freight car and let off the brake. As he was getting on top the conductor signaled the engineer to back up; he obeyed, the cars came together and the brakeman was crushed. The company was held liable, because the conductor was regarded as its agent, and not the fellow-servant of the brakeman. "The negligence of the conductor was the negligence of the company."

Lastly may be mentioned the approval of this case by the Supreme Court of California, which regards the opinion of Mr. Justice Field as "learned and admirable." The court also adds: "Courts have gone so far as to relieve from responsibility corporations acting through general agents within the scope of their authority, classing the foremen, managers and superintendents with those under them as co-laborers; but the Supreme Court of the United States begins to turn the tide." (26)

Not an altogether vain hope so far as the state courts can aid in turning the tide, but vain, indeed, with respect to the United States Supreme Court itself.

For, ere long it reversed itself, attacking its own rule. This was done in the case of Baugh against the Baltimore & Ohio Railroad. (27) A fireman was injured through the negligence of the engineer, both of whom were managing an engine attached to a freight train. A rule of the company provided that "whenever a train or engine is run without a conductor, the engineman thereof will also be regarded as conductor and will act accordingly." So the question under the operation of this rule was precisely like the question in the Ross case. Yet the court decided that both were fellow-servants and, consequently, the company was not liable. The reasons for this reversal, which were stated by Mr. Justice Brewer, may be given. "Prima facie," he begins, "all who enter into the employ of a single master are engaged in a common service and are fellow-servants and some other line of demarcation than that of control must exist to destroy the relation of fellow-servants. All enter the service of the same master, to further his interests in the one enterprise; each knows, when entering into that service, that there is some risk of injury through the negligence of other employes, and that risk, which he knows exists, he assumed in entering into the employment."

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(25) Denver R. v. Driscoll, 12 Colo. 520.

(26) Gier v. Los Angeles R. Co., 108 Cal. 129.

(27) 149 U. S. 368.

Mr. Justice Field was still a member of the court and dissented most vigorously from the majority, supported by the Chief Justice. In 1900 the finish was made of the Ross case, in the case of Conroy v. New York and New England Co. (28) Justice Shiras wrote the opinion of the court and reviewed at great length the decisions rendered by the state courts, showing clearly enough that the rule in many of them was in harmony with the new rule established by the federal court. Thus, the attempt made by the Supreme Court in the Ross case to convert the railway conductor into a servant or agent of his employer has entirely failed, and he still ranks as a fellow-employe along with the brakeman and other trainmen. Furthermore, it will be seen from the extract quoted from Mr. Justice Brewer's opinion that all the servants of a company generally are to be regarded as fellow-servants, and thus the doctrine announced in the case of Priestley and Farwell, described in the first chapter of this work, has at last been stretched to include almost all servants working under a common employer, and relieving a company or employer from all liability to respond for their negligence, on the ground that the employes, whether few or many, assume the risk. Doubtless the Supreme Court would hold, in the case of a railroad company, that the president, vice-president and superintendent and a few other officers are its agents and not fellow-servants of the thousands working under their immediate or remote direction; but who are its agents and who are not? The last case, that of Conroy, leaves all in the dark. It smites down every rule that the courts have tried to draw between agents and non-agents employed by a company; it shows that they are all based on a sandy foundation and ought not to stand. What, then, is left of this doctrine of fellow-service? We cannot see anything in the way of a federal rule except that of the department test that has been already considered. It is true that a few of the leading officers may still be regarded as agents, for whose acts their company may be liable, but the court does not take the trouble to define them. Perhaps it was not worth while, for they are so few and remote from the work of most of the employes no occasion is likely to arise in which they would incur any negligence whereby others would suffer.

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(28) 175, U. S. 323.

Notwithstanding Justice Cobb's prediction, this rule at present is receding. The courts of Louisiana and Virginia have greatly modified their earlier position, and there are few if any signs of its adoption by other states.

Indiana has been among the most prominent states in opposing it. The rule has long prevailed in that state that control or direction alone of an employe does not constitute the director a vice-principal. A foreman, therefore, or other similar agent, to whom the master's authority is not delegated, is a fellow-servant with those under his employ.

Nor does the rule prevail in California. Indeed, a statute prevents its operation and provides that an employer is not responsible for the conduct of his foreman in directing operations. But the employer is responsible for furnishing safe appliances, etc., and also in selecting the foreman or superintendent. If he is incompetent, then the employer is liable for the act. (29)

Nor does this rule, the test of control, prevail in New York. Unless, therefore, fellow-servants work in different departments, or their director who is negligent is a vice-principal, or the principal himself, they are fellow-servants, and redress is denied them, assuming, of course, that the employer has done his duty in furnishing safe appliances. A few application of the rule, therefore, may be considered. An employe engaged in oiling a machine in a factory and the engineer are regarded as fellow-servants; (30) likewise a laborer and engineer employed by the same company; (31) a foreman and men under his direction; (32) workmen on a railroad repairing a pit and and a car coupler who fell into it; (33) a timber boss who superintendents the repair of a mine and those who are assisting him in making repairs; (34) also, a brakeman and conductor. (35)

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(29) McLean v. Blue Point Gravel Co., 51 Cal. 255; Stephens v. Doe, 73 Cal. 26.

(30) Henshaw v. Pond's Extract Co., 66 Hun. 632.

(31) Mele v. Canal Co., 14 N. Y. Supp. 630; Russell v. Railroad, 17 N. Y. 134.

(32) Brown v. Maxwell, 6 Hill 592; Sherman v. Railroad, 17 N. Y. 153; Malone v. Hathaway, 64 N. Y. 5.

(33) Filbert v. Delaware & Hudson Canal Co., 121 N. Y. 207.

(34) Jenkins v. Mahopac Iron Ore Co., 57 Hun 588.

(35) Slater v. Jewett, 85 N. Y. 61.

Alabama: Mobile R. v. Smith, 59 Ala. 245.

California: Donnelly v. San Francisco Budge Co., 117 Cal. 417.

9. Passing from these rules determining the relationships of those in higher authority to those below them, we will next consider the relationship to one another of those who are essentially in the same grades of service. The eighth rule, therefore, is servants deriving authority from the same employer and engaged in the same business, though in different departments are fellow-servants. This exists chiefly in Massachusetts, Minnesota and Maryland.

"In the case of an injury," says Justice Gray, of the Supreme Court of Massachusetts, "to one servant by the negligence of another, it is immaterial whether he who causes and he who sustained the injury are or are not engaged in the same or similar labor, or in positions of equal grade or authority. If they are acting together under one master in carrying out a common object, they are fellow-servants." (37)

Another application of the rule has been made to a superintendent and operative in a cotton-mill, who are declared to be fellow-servants. In the case of Albro v. Agwam Land Company, (37) the

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Colorado: Denver R. v. Driscoll, 12 Colo. 520; Colo. Midland R. v. Naylon, 17 Colo. 501.

Connecticut: Darrigon v. New York R., 52 Conn. 285; Sullivan v. New York R., 62 Conn. 209.

Indiana: Drinkout v. Eagle Mach. Works, 90 Ind. 423; Robertson v. Chicago R., 146 Ind. 486.

Iowa: Newbury v. Getchel Lumber Co., 100 Iowa 441; Fosburg v. Phillips Fuel Co., 93 Iowa 54.

Louisiana: Mattise v. Consumers' Ice Mfg. Co., 46 La. Ann. 1535.

Maine: Blake v. Maine Central R., 70 Me. 60; Dube v. Lewiston, 83 Me. 211.

Maryland: Norfolk R. v. Hoover, 70 Md. 253; Yates v. McCullough Iron Co., 69 Md. 370.

Massachusetts: O'Brien v. Rideout, 161 Mass. 170; Moody v. Hamilton Mfg. Co., 159 Mass. 70.

Michigan: Beesley v. Wheeler, 103 Mich. 196; Andrew v. Winslow Brothers, 76 N. W. Rep. 86.

Minnesota: Carlson v. Northwestern Tel. Ex. Co., 63 Minn. 426; Lindvall v. Woods, 41 Minn. 212.

New Jersey: O'Brien v. Am. Dredging Co., 53 N. J. Law 291; McLaughlin v. Camden Iron Works, 60 N. J. Law 557.

New York: McCosker v. Long Island R., 84 N. Y. 77; Gibbons v. Brush Electric Co., 36 N. Y. App. Div. 140.

North Dakota: Ell v. Northern Pacific R., 1 N. Dak. 336.

Oregon: Mast v. Kern, 54 Pac. Rep. 950; Willis v. Oregon R., 11 Ore. 257.

Pennsylvania: Durst v. Carnegie Steel Co., 173 Pa. 162; Greenway v. Conroy, 160 Pa. 185; McGinley v. Levering, 152 Pa. 366.

Rhode Island: Larich v. Moies, 18 R. I. 513; Miller v. Coffin, 19 R. I. 164.

Vermont: Hard v. Vermont R., 32 Vt. 473; Davis v. Central Vt. R., 55 Vt. 84.

Virginia: Norfolk R. v. Nuckols, 91 Va. 193; Norfolk R. v. Donnelly, 88 Va. 853; Richmond Locomotive Works v. Ford, 94 Va. 627.

Wisconsin: McMahon v. Ida Mining Co., 95 Wis. 308; Luebke v. Chicago R., 59 Wis. 127.

(36) Gilman v. Eastern R., 10 Allen 233, 236.

(37) 6 Cush. 75, 77.

court said: "It cannot affect the principle that the duties of the superintendent may be different, and perhaps may be considered as of a somewhat higher character than those of the plaintiff; inasmuch as they are both the servants of the same master, have the same employer, are engaged in the accomplishment of the same general object, are acting in one common service and derive their compensation from the same source."

In harmony with this rule a car repairer and a switchman are fellow-servants; (38) the engineer of a train and a switchman; (39) an apprentice in a railroad company's shop acting as a fireman on a train and a switchman; (40) a railroad laborer who is employed in repairing the road-bed while going to his place of work, and those in charge of the train carrying him. (41) Lastly may be mentioned a brakeman and another in a different train. They, too, are swept within this all-embracing rule. (42)

In Holden v. Fitchburg R., (43) the court said: "It is well settled in this Commonwealth and in Great Britain that the rule of law, that a servant cannot maintain an action against his master for an injury caused by the fault or negligence of fellow-servants, is not confined to the case of two servants working in company, or having opportunity to control or influence the conduct of each other, but extends to every case in which the two deriving their authority and their compensation from the same source, are engaged in the same business, though in different departments of duty; and it makes no difference that the servant whose negligence causes the injury is a sub-manager or foreman of higher grade or greater authority than the injured servant." (44)

This rule, that all employed by the same master are fellow-servant, has been applied with only slight modifications in Minnesota. One of the earlier cases related to an engineer of a railroad who was injured through the negligence of a station agent. "Prima facie," said the court, "the plaintiff and the station agent were fellow-servants, for they were acting together under one master in carrying out a common object. They were engaged in the same common employment under the same general control. Is there anything to except the station agent from this prima facie relationship of fellow-servant to the plaintiff? He would be excepted only if he stood in the place of the master as a vice-principal, or, as it is sometime expressed, as the master's alter ego. But one employed becomes a vice-principal as respects another only when he is entrusted with the performance of some absolute and personal duty of the master himself, such as the providing of proper instrumentalities with which the service required of an employe is to be performer, or the general management and control of the master's business, or of some branch of it." (45) In such cases the negligence of the vice-principal is the negligence of the master. But the general management or control of the master's business or some branch thereof, does not include the case of one simply charged with special duties performing them under the direction of the master or under the control of superior officers. (46) The engineer and station master, therefore, were fellow-servants. The same relationship was declared to exist between a baggage master and switch tender; (47) a scaler in a mill-yard and those engaged there in piling lumber; (48) the foreman of a round house and a truck packer; (49) the foreman of a section and the section men; (50) section men and those engaged in running trains; (51) foremen and laborers under them while engaged in building a trestle. (52)

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(38) Gilman v. Eastern R., 10 Allen 233.

(39) Farwell v. Bostern & Worcester R., 4 Met. 49.

(40) King v. Boston & Worcester R., 9 Cush. 112.

(41) Gilshannon v. Stony Brook R., 10 Cush. 228; Gilman v. Eastern R., 10 Allen 233; Seaver v. Boston & Maine R., 14 Gray 466.

(42) Hayes v. Western R., 3 Cush. 270.

(43) 129 Mass. 271.

(44) Moody v. Hamilton Mfg. Co., 159 Mass. 70.

Neither the seventh rule nor the sixth, which hold that one who hires, controls and discharges servants is to be regarded as a vice-principal are tests of vice-principalship in that state. The duty to furnish safe appliances, etc., and to appoint competent persons to keep them in repair is a duty of the emloyer, "but where," so the court remarks, "there has been no lack of diligence on the part of the master in the performance of those duties, it is manifest that the use and operation of machinery, and the execution and management of the details of the business, must necessarily be committed to those who, from the nature of their employment, for a common master and a common purpose are co-servants, who must each, among the hazards of the employment, be deemed to assume the risk of the negligent acts, omissions or mistakes of fellow-servants. (53) This principle was fatal to the cause of an employe who, with other servants, was assisting in handling and removing cars in a railroad yard. They were under the direction of a foreman who, in turn, received orders from the yard master and division superintendent; and the foreman was deemed a fellow servant with the other.

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(45) Drymala v. Thompson, 26 Minn. 40.

(46) Brown v. Minneapolis R., 31 Minn. 553.

(47) Roberts v. Railroad, 33 Minn. 218.

(48) Fraser v. Red River Lumber Co., 45 Minn. 235.

(49) Gonsior v. Railroad, 36 Minn. 385.

(50) Olson v. Railroad, 38 Minn. 11.

(51) Foster v. Railroad, 14 Minn. 360; Connelly v. Railroad, 38 Minn. 80.

(52) Lindvall v. Woods, 41 Minn. 212.

(53) Fraker v. St. Paul R., 32 Minn. 212.

In Maryland this rule is enforced. Thus says the court: "The decided weight of authority is to the effect that all who serve the same master work under the same control, deriving authority and compensation from the same source, and are engaged in the same general business, though it may be in different departments of it, are fellow-servants, each taking the risks of the other's negligence. To state the rule more generally, all who are engaged in accomplishing the ultimate purpose in view, that is, running the road, must be regarded as engaged in the same general business, within the meaning of the rule. It follows, therefore, that the brakeman on the train is in the same common employment with the mechanics in the shop to repair and keep in order the machinery, and with the inspector of the machinery and rolling stock of the road, and the superintendent of the movement of the trains." (54)

Yet it has not been adopted by the Supreme Court of the United States. Speaking through Justice Brewer, the court says: "The truth is, the various employes of one of these large corporations are not graded like steps in a staircase, those on each step being as to those on the step below in the relation of masters and not of fellow-servants, because not subject to any control by one over the others. Prima facie, all who enter into the employ of a single master are engaged in a common service, and are fellow-servants, and some other line of demarcation than that of control must exist to destroy the relation of fellow-servants. All enter into the service of the same master to further his interests in the one enterprise; each knows when entering into that service that there is some risk of injury through the negligence of other employes, and that risk, which he knows to exist, he assumes in entering into the employment." (55) Wherever this rule prevails it is quite evident that almost every employe is swept within the relationship of fellow-service—very few, indeed, remain outside. (56)

10. The last rule or test of fellow-service is that of co-assistance, or equal authority or direction. It is also known as the different department test or limitation, and it applies to employes who do not differ essentially in rank but in the kind of labor performed by them. This rule has no recognition whatever in the states where the last described prevails. It has a firm footing, though, in a goodly number of states, and the pioneer was Illinois. In one of

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(54) Wonder v. Baltimore & Ohio R., 32 Md. 418; Hamathy v. Railroad, 46 Md. 280; Yates v. McCullough Iron Co., 69 Md. 370.

(55) Baltimore & Ohio R. v. Baugh, 149 U. S. 368, 384.

(56) Id. 382.

the cases the rule is thus expressed by Chief Justice Scholfield: "The servants of the same master, to be co-employes, so as to exempt the master from liability on account of injuries sustained by one resulting from the negligence of the other, shall be directly co-operating with each other in a particular business, that is, the same line of employment—or that their usual duties shall bring them into habitual association, so that they may exercise a mutual influence upon each other promotive of proper caution. The idea is, that the relation between the servants must be such that each, as to the other, by the exercise of ordinary caution, can either prevent or remedy the negligent acts of the other, or protect himself against the consequences; and, of course, where there is no right or no opportunity of supervision, or when there is no independent will and no right or opportunity to take measures to avoid the negligent acts of another without disobedience to the orders of his immediate superior, the doctrine can have no application. How can the laborer be profited by the knowledge of the usual manner of doing work in another department, if he is unable, in any reasonable way, while engaged in the proper discharge of his duties, and without disobedience to his immediate superiors?" (57)

The way this rule is regarded by the Supreme Court of Missouri is worthy of notice. "Guided by the real reason for the rule, it seems to us it should be applied only in those cases where the servant injured and the one inflicting the injuries are so associated and related in their work that they can observe and have an influence over each other's work, and can report delinquencies to a common correcting power or head. In short, they should be fellow-servants in fact, and not simply in diabetic theory. If in separate, distinct departments, so that the circumstances just quoted do not and cannot exist, then they are not fellow-servants in any just and fair meaning of the rule. The mere fact that a defective appliance causing injury was constructed by a fellow-servant, does not release the master from liability therefor; but he is not liable if he furnished suitable materials for the appliances and competent workmen to construct it, and entrusted them with its construction as part of the work which they were employed to perform, and one of them is injured in its construction by reason of a defect therein. All so engaged, as to each other, are fellow-servants." (58)

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(57) North Chicago Rolling Mill Co. v. Johnson, 114 Ill. 57, 64; Chicago R. v. Moranda, 93 Ill. 302; Chicago & Alton R. v. May, 108 Ill. 288; Chicago R. v. Geary, 110 Ill. 383.

Arizona: Hobson v. New Mexico R., 11 Pac. Rep. 545.

Georgia: Cooper v. Mullins, 30 Ga. 150; Krogg v. ....

Illinois: Ryan v. Chicago R., 60 Ill. 171; Pittsburg R. v. Powers, 74 Ill. 341; see especially Chicago R. v. Moranda, 93 Ill. 302.

Kentucky: Louisville R. v. Rains, 23 S. W. Rep. 505 (1893); Illinois Cent. R. v. Ackley, 87 Ky. 278.

Missouri: Parker v. Hannibal & St. Joseph R., 109 Mo. 362; Musick v. Packing Co., 58 Mo. App. 322.

Nebraska: Union Pacific R. v. Erickson, 59 N. W. 347 (1894).

Tennessee: Nashville R. v. Jones, 9 Heisk. 27; Nashville R. v. Carroll, 6 Heisk. 347; Cool Creek Mining Co. v. Davis, 90 Tenn. 711.

Utah: Pool v. Southern Pacific R., 7 Utah 303; Webb v. Denver R., 7 Utah 363; Daniels v. Union Pacific R., 6 Utah 357.

West Virginia: Madden v. Chesapeake & Ohio R., 28 W. Va. 610.

Idaho: Palmer v. Uutah R., 2 Idaho 290.

Mississippi: Illinois Central R. v. Hunter, 70 Miss. 471.

Ohio: Cincinnati R. v. Margrat, 51 Ohio St. 130.

Indiana: Gillenwater v. Madison R., 5 Ind. 339. The rule was afterward repudiated in that state. Columbus R. v. Arnold, 31 Ind. 174; Gormley v. Ohio R., 72 Ind. 31.

Federal: Pike v. Chicago R., 41 Fed. 91; Garrahy v. Kansas City R., 25 Fed. 258.

Turning now to the application of this rule in Illinois, locomotive engineers on the same road are fellow-servants; (59) so are brakemen and conductors; (60) so is an engineer employed by a mining company to let a cage down a shaft with a track-layer; (61) so is a laborer on a construction train with the engineer and conductor; (62) so is a blacksmith employed by a railroad and a conductor of a train while going to remove a wreck. (63)

The Illinois rule of co-association as a test of fellow-service has been applied in West Virginia. (64) The injured servant was employed to take and record the numbers on cars coming into the station. His work was in the engine yard. He was injured by an engineer who was running a switching engine. The court says: "Plainly this engineer and car numberer were fellow-servants. There was a natural and necessary connection between the classes of service they rendered, bringing them into contact with each other in the same place in the execution of the master's business, which was the pursuit common to both, and they were under common pay and control of that master, and it is no matter that their work was dissimilar. Neither was the agent of the master as to the other."

This rule is often known as the department rule and under that name has been applied in many states. One of the most elaborate statements of the rule is by Justice Brewer, in Baugh's case, (65) for the court, after overthrowing the principle of control as a test of fellow-service, clung to this fragment. "If the business of the master and employer becomes so vast and diversified that it naturally separates itself into departments of service, the individuals placed by him in charge of those separate branches and departments of service, and given entire and absolute control therein, are properly to be considered, with respect to employes under them, vice-principals, representatives of the master, as fully and as completely as if the entire business of the master was by him placed under the charge of one superintendent. But this rule can only be fairly applied when the different branches or departments of service are in and of themselves separate and distinct. Thus, between the law department of a railway corporation and the operating department there is a natural and distinct separation, one of which makes the two departments like two independent kinds of business in which the one employer and master is engaged. So, oftentimes, there is in the affairs of such corporation what may be called a manufacturing or repair department; these two departments are, in their relations to each other, as distinct and separate as though the work of each was carried on by a separate corporation. And from this natural separation flows the rule that he who is placed in charge of such separate branch of the service, who alone superintends and has control of it, is as to it in the place of the master. But this is a very different proposition from that which affirms that each separate piece of work in one of these branches of service is a distinct department, and gives to the individual having control of that piece of work the position of vice-principal or representative of the master."

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(58) Parker v. Hannibal & St. Joseph R., 109 Mo. 409.

(59) Ohio R. v. Robb, 36 Ill. App. 627.

(60) Chicago R. v. Snyder, 117 Ill. 376.

(61) Niantic Coal & Mining Co. v. Leonard, 126 Ill. 216.

(62) Miller v. Railroad, 24 Ill. App. 326.

(63) Abend v. Railroad, 111 Ill. 202.

(64) Beuhring v. Chesapeake & Ohio R., 37 W. Va. 502.

(65) 149 U. S. 383.

In Missouri, this rule was elaborately considered in Parker v. Hannibal & St. Joseph Railroad, (66) the court saying: "We believe it is conceded on all hands that there are certain duties personal to the master, and for the non-performance of which, resulting in any injury, he is liable even to a servant. Thus, he must observe due care in furnishing suitable machinery and appliances, in seeing that the machinery and appliances are kept in repair; in the selection of competent and trustworthy servants; in making suitable rules and regulations for the conduct of a complex business, and in seeing that youthful persons receive proper warning. It is often said that the servant entrusted with the performance of the duties personal to the master is not a fellow-servant with those engaged in the prosecution of other work; but such statements are misleading, and have been the source of much trouble. The master is liable for a negligent performance of these duties no matter by or through whom he undertakes to perform them."

This rule has been applied in Michigan. A saw-mill hand who cleans out saw dust from the machinery is, therefore, a fellow-servant with the engineer; (67) so is a brakeman and conductor; (68) so is a brakeman and an employe who is loading a car; (69) the foreman in a blast furnace having charge of the inside is a fellow-servant with the engineer of the locomotive used in moving cars in the business; (70) so are painters and carpenters at work on the same house; (71) so is a section hand with a conductor and engineer. (72) On the other hand, servants who are digging a trench in a lumber yard and other who are hauling lumber are not fellow-servants. (73)

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(66) 109 Mo. 362.

The rule is recognized in Florida and in applying it the court has remarked: "If one was engaged as a common laborer to work on the road bed or gravel train, he could not be a fellow-servant with the engineer or conductor of a passenger train, but would be a fellow-servant with all employed on the road bed or gravel train, if his employment was in a common work, and brought him in immediate contact with them, and risk through them, although working under the orders of a different boss or foreman in the said common work, and in different sorts of work." (74)

This rule is also a part of the law of Virginia, and employes in different departments of the common employment, though of the same grade, are not fellow-servants. Engineers, on the contrary, employed on the same road are fellow-servants, for they belong to the same department.

The question has been well answered by the Supreme Court of that state, who are co-employes. "They are co-employes engaged in the same department of service, who are thrown together in the performance of a common duty, and having opportunity to observe and judge of the liability and qualification of each other." In Moon v. Railroad, (75) the same court said: "The fellow-servant or co-employe for whose negligence the company is not liable is one who is in the same common employment—that is, in the same shop, or placed with or having no authority over the one injured and who is no more charged with the discretionary exercise of powers and duties imperatively resting upon the master than the injured party; but where a person is placed in charge of the construction or repair of machinery, the dispatching of trains, the maintenance of ways, etc., he is not a fellow-servant with those under him, nor with those in a different department of the service. He is the agent of the company which has assumed through him the performance of duties which are absolute and imperative, the omission or negligent performance of which the law will in no wise excuse."

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(67) Bergstrom v. Staples, 82 Mich. 654.

(68) Smith v. Potter, 46 Mich. 258.

(69) Day v. Railroad, 42 Mich. 523.

(70) Adams v. Iron Cliffs Co., 78 Mich. 271.

(71) Hoar v. Merritt, 62 Mich. 386.

(72) Hanson v. Railroad, 79 Mich. 409.

(73) Sadowski v. Michigan Car Co., 84 Mich. 100.

(74) Parish v. Railroad, 28 Fla. 251.

(75) 78 Va. 74.

The department test is also applied in Texas. In the case of the Missouri Pacific Railway v. Williams, (76) the court held that an employe who had charge of a special department, with powers to hire and discharge men, was not a fellow-servant with them. Says the Court: "A servant who has the authority to employ other servants under his immediate supervision exercises an important function of his master, and has a full control over him as his master would have, were he present acting in person. The subordinate, in such a case, is as much the servant of the agent who employs and controls him, as he would be of the master, were the latter discharging the functions of his agent." A railroad employe in the transportation department is, therefore, a fellow-servant with those employed there; so is a conductor on a gravel train and a laborer. But a track repairer is not a fellow-servant with those who operate regular trains.

11. One other view prevails which has thus been expressed by the Supreme Court of Arkansas. "It seems that the courts have been inclined to determine whether the relations exists, or does not exist, according to the circumstances of each case, as it arises, rather than to formulate any rule of general application." (77) Nor is the Supreme Court of Arkansas a solitary supporter of this position. After vainly trying to apply several rules this is the despairing conclusion recently announced by the Supreme Court of Illinois. Says Justice Mulkey: (78) "The mere fact that one of a number of servants who are in the habit of working together in the same line of employment for a common master has power to control and direct the action of the others with respect to such employment, will not, of itself, render the master liable for the negligence of the governing servant resulting in an injury to one of the others, without regard to other circumstances. On the other hand, the mere fact that the servant exercising such authority sometimes, or generally, labors with the others as a common hand, will not, of itself, exonerate the master from liability for the former's negligence in the exercise of his authority over the others. Every case in this respect must depend upon its own circumstances."

The courts, therefore, that have adopted this guide have sometimes applied the principle of employment and control, at another time that simply of control, at another the department or the co-association test, in their determinations. The Illinois decisions read in this light are quite as intelligible as those of any other state. They are very numerous but easily understood when each is considered as standing by itself, and quite as harmonious as those of other states which have sought to be guided by the rules we have described.

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(76) 75 Texas 4.

(77) Bloyd v. Railway Co., 58 Ark. 70.

(78) Chicago & Alton R. v. May, 108 Ill. 288 ,298. Recently quoted in Gall v. Beckstein, 173 Ill. 187, 190; Abend v. Terre Haute R., 111 Ill. 202.

But what shall be said of a system of jurisprudence which requires an injured employe to resort to the slow and costly process of an action at law to determine the question whether such a legal relationship exists between himself and his employer that he has a right to demand compensation for his injury? This is not intended as a reflection on the courts, which have honestly and intelligently sought to administer the law, but is a reflection on the law or lack of the law itself. Surely such a state of things is in utter disharmony with an intelligent legal system.

CHAPTER X.

CONTRIBUTORY NEGLIGENCE.

1. Next to the question who are fellow-servants, the question of determining the liability of employer and employe when both are negligent has given the courts the greatest trouble. In many of them the rule has been thus stated. "When it appears that the negligence of the parties was concurrent and co-operated to produce the injury no action will lie, the law refusing to apportion the fault and regarding the negligence of either party as equally proximate." (79) Says Justice Swayne: "It has been a rule of law from

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(79) Kentucky: Paducah & Memphis R. v. Hoehl, 12 Bush. 41; Ky. Central R. v. Thomas, 79 Ky. 160.

Connecticut: Isbell v. New York & New Haven R., 25 Conn. 556.

Georgia: Brighthope R. v. Rogers, 76 Ga. 443.

Maryland: Northern Central R. v. State, 31 Md. 357; Toledo & Wabash R. v. Goddard, 25 Md. 185.

Michigan: Williams v. Michigan Central R., 2 Mich. 259.

Mississippi: Memphis & Charleston R. v. Whitfield, 44 Miss. 466.

Missouri: McKeon v. Citizens R., 43 Mo. 405.

North Carolina: Herring v. Wilmington & Raleigh R., 10 Ired. (Law) 402.

New York: Owen & Hudson River R., 35 N. Y. 516.

Pennsylvania: Catawissa R. v. Armstrong, 49 Pa. 186.

Tennessee: Louisville & Nashville R. v. Burke, 6 Cald. 45.

Virginia: Dun v. Seaboard & Roanoke R., 78 Va. 45; Baltimore & Ohio R. v. Sherman, 30 Gratt. 805; .... v. Mills, 76 Va. 773; Richmond & Danville R. v. Moore, 78 Va. 93; Richmond & Danville R. v. Yeamans, 86 Va. 860; Rudd v. Richmond & Danville R., 80 Va.

Wisconsin: Potter v. Chicago & Northwestern R., 21 Wis. 372.

time immemorial, and it is not likely to be changed in all time to come, that there can be no recovery for an injury caused by the mutual fault of both parties. Where it can be shown that it would not have happened except for the culpable negligence of the party injured concurring with that of the other party, no action can be maintained." (80)

This rule, which prevails more widely than any other in this country, had its origin in England, and was first stated in the case of Butterfield v. Forrester, (81) and afterward in Bridge v. Grand Junction Railway Co. (82) in Davis v. Mann, (83) and in Dowell v. General Steam Nav. Co. (84) It was most fully stated in Tuff v. Warman, (85) Justice Wightman saying: "It appears to us that the proper question for the jury in this case, and indeed in all others of the like kind, is, whether the damage was occasioned entirely by
the negligence or improper conduct of the defendant, or wheth
the plaintiff himself so far contributed to the misfortune by
own negligence or want of ordinary and common care and cau
that, but for such negligence or want of ordinary care and ca
on his part, the misfortune would not have happened. In
case the plaintiff would be entitled to recover; in the
as, but for his own fault the misfortune would not hav
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(80) Railroad Co. v. Jones,
(81) 11 East 60.
(82) 3 M. & W. 246.
(83) 10 M. & W. 54.
(84) 5 E. & B. 206.
(85) 5 C. B. 573.

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N. Car. 310; Daggett v. Richmond R., 8 N. Car. 305;
7 N. Car. 686.
25 Me. 39, 47.
., 6 Gray 64.
101 Mass. 455, 466, citing Lucas v. New Bedford &
obinson v. Cone, 22 Vt. 213.

occurrence. If, in other words, the injury though inflicted by another, was unavoidable by the exercise of proper diligence, by reason of the situation of peril into which the party by his own neglect, had placed himself, he must be considered as the party solely in fault, and as the author of his own misfortune." (86)

In New York, in the case of Johnson v. Hudson River R., (87) the court declared the true rule to be that "the jury must eventually be satisfied that the plaintiff did not by any negligence of his own contribute to the injury. The evidence to establish this may consist in that offered to show the nature or cause of the accident, or in any other competent proof. To carry a case to the jury, the evidence on the part of the plaintiff must be such as, if believed, would authorize them to find that the injury was occasioned solely
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sc luct on the occasion of the accident. The character of the de-
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to show by independent evidence that he did not bring
une by himself. No more certain rule can be laid down."
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determining the ed to the want of ordinary care and caution
negligent has give l; subject to the qualification that the con-
them the rule has f the party injured will not defeat the ac-
negligence of the part the defendant might, by the exercise of
the injury no action w nce, have avoided the consequences of
fault and regarding the ne e." (88)
mate." (79) Says Justice Sw rer by considering the qualification
(79) Kentucky: Paducah & Memp of itself. Thus, in North Carolina,
v. Thomas, 79 Ky. 160. ding the previous negligence of
Connecticut: Isbell v. New York & N the injury was committed, it
Georgia: Brighthope R. v. Rogers, 76 ercise of reasonable care and
Maryland: Northern Central R. v. Stat

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v. Goddard, 25 Md. 185. 645, 658; Richmond & Danville
Michigan: Williams v. Michigan Central R
Mississippi: Memphis & Charleston R. v. W
Missouri: McKeon v. Citizens R., 43 Mo. 405.
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Danville R. v. Moore, 78 Va. 93; Richmond & Dan
860; Rudd v. Richmond & Danville R., 80 Va.
Wisconsin: Potter v. Chicago & Northwestern R., 2.

prudence on the part of the defendant, an action will lie for damages." (89)

In the Gunter case he was employed as a foreman in running a steam saw mill belonging to the defendants, and among other duties was required to oil the machinery. Once, while doing this and standing among the machinery, the defendant, without giving him any notice, turned on the steam and set the mill in motion, whereby he was injured. The court remarked: "Whatever want of care for his own safetly the plaintiff may have manifested in occupying a place of peril while doing his work, no harm would have come to him but for the hasty and inconsiderate act of the defendant in starting the mill without signal, warning or himself looking to see, as he could have done, whether the oiling, then to be done, was finished, and the plaintiff had retired from his position. This care and attention would have prevented the accident, and to this absence it must be attributed. The place of peril assumed by the plaintiff in doing his work not only did not excuse the defendant, but imposed upon him greater diligence and a higher duty in examining to see if the way was clear for a resumption of the sawing. The plaintiff's exposure of his person was not a cause but a condition which rendered the injury possible and actual, as the result of the absence of the caution which was imposed upon the defendant in consequence."

3. In Maine, the rule is declared to be "if the party by the want of ordinary care contributed to produce the injury, he will not be entitled to recover. But if he did not exercise ordinary care, and yet did not by the want of it contribute to produce injury he will be entitled to recover." (90)

4. The Massachusetts rule is: "Though there may have been negligence on the part of the plaintiff, yet he is entitled to recover unless he might, by the exercise of ordinary care, have avoided the consequences of the defendant's negligence." (91)

The English rule does not apply in Massachusetts in cases of contemporaneous negligence by both parties. Thus, the court says: "Where the negligence conduct of the two parties is contemporaneous, and the fault of each relates directly and proximately to the occurrence from which the injury arises, the rule of law is rather that the plaintiff cannot recover if by due care on his part he might have avoided the consequences of the carelessness of the defendant. (92) We think it is manifest that the rule laid down in Tuff v. Warman is not the correct rule of law which governs ordinary cases of injury by negligence; but whenever there is negligence on the part of the plaintiff, contributing directly, or as a proximate cause to the occurrence from which the injury arises, such negligence will prevent the plaintiff from recovery; and the burden is always upon the plaintiff to establish either that he himself was in the exercise if due care, or that the injury is in no degree attributable to any want of proper care on his part." (93)

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(89) Gunter v. Walker, 85 N. Car. 310; Daggett v. Richmond R., 8 N. Car. 305; Deans v. Wilmington R., 107 N. Car. 686.

(90) Kennard v. Burton, 25 Me. 39, 47.

(91) Lucas v. Taunton R., 6 Gray 64.

(92) Murphy v. Deane, 101 Mass. 455, 466, citing Lucas v. New Bedford & Taunton R., 6 Gray 64; Robinson v. Cone, 22 Vt. 213.

5. In Vermont, the rule has thus been expressed by Justice Redfield: "In order to sustain the action on the case for negligence of the defendant it must appear that the injury did not occur from any want of ordinary care on the part of the plaintiff, either in whole or in part. In other words, if ordinary care on the part of the plaintiff would have enabled him to escape the consequences of the defendant's negligence, he has no ground of complaint. He may be said, in such a case, to have been himself the cause of any injury which he may have sustained under such circumstances." In this case the English rule declared in Davies v. Mann and other cases mentioned was fully considered and not wholly approved. (94)

6. The rule in Pennsylvania has always been that if "the negligence of the party contributed in *any* degree to the injury he cannot recover. This is a safe rule, easily understood, and cannot well be frittered away by the jury." (95)

"Safe rule" for whom, we may inquire. Whose safety and whose alone was evidently in the mind of the court. Truly, the rule cannot be frittered away. No matter how negligent the employer may have been, if the employe contributed in *any* (the italics are the court's) degree to the injury, he can get nothing. He must appear before the court of Pennsylvania immaculate, not a speck on his garments, otherwise he cannot recover. We rejoice that of the forty-eight states in the Union no other has such a one-sided rule.

7. In Indiana, "it is the general doctrine, and the settled law of this state that where negligence is the issue, it must be a case of unmixed negligence; that in such case a party cannot recover if it appear that by the want of ordinary care and prudence on his part he contributed to the injury, or if, by the exercise of ordinary care, he might have prevented the injury." (96)

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(93) Trow v. Vt. Central R., 24 Vt. 487; Burge v. Gardiner, 19 Conn. 507.

(94) Robinson v. Cone, 22 Vt. 213, 222.

(95) Monongahela City v. Fischer, 111 Pa. 9; Oil City Supply Co. v. Boundy, 122 Pa. 449; Mattimore v. Erie City, 144 Pa. 14; Railroad v. Norton, 24 Pa. 465; Brown v. Clark, 14 Pa. 469.

(96) Terre Haute R. v. Graham, 95 Ind. 286, 291; Bellefontaine R. v. Hunter, 33 Ind. 335; Higgins v. Jeffersonville R., 52 Ind. 110; St. Louis R. v. Mathias, 50 Ind. 65; Jackson v. Indianapolis R., 47 Ind. 454.

If the evidence shows that the injury resulted from either of two causes, only one of which was due to the defendant's negligence, no inference can be decisive, and the plaintiff cannot recover because he must make out a positive case. Thus, after a freight train passed through a tunnel a brakeman was found in a dying condition. There were loose timber hanging from the roof, and one theory was that he was struck by one of them; the other theory was that he did not sit down when he came to the tunnel, as he should have done. As there was no positive proof of the cause of his death the negligence of the company was not proved. (97)

8. "When the defence is contributory negligence, the proper question for the jury is, whether the damage was occasioned entirely by the negligence or improper conduct of the defendant, or whether the plaintiff himself so far contributed to the misfortune by his own negligence or want of ordinary or common care and caution, that but for such negligence or common caution on his part the misfortune would not have occurred. In the first place, the plaintiff would be entitled to recover; in the latter, he would not." (98)

9. When a person is injured and sues his employer to recover, he must make out his case, that the employer was negligent. Can this ever be presumed? In South Carolina the Supreme Court held it could be in a case in which cattle were injured by the engine of a railroad who ran over them. He had done so several times before, and the court thought this presumption clearly arose. (99) An attempt was afterwards made to change the rule, (100) but the court refused to overthrow it. The court declared that the plaintiff having proved that the cattle were killed by the train, the burden of proof was on the railroad to show that its engine had not been negligent.

Is not the presumption even? In other words, there can be no presumption. The law can presume nothing.

When the negligence of a principal and that of another servant produces an injury to another servant the principal is liable therefor. The servant assumes the risk of negligence of his fellow-servant, but not that of his master. (1)

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(97) Hughes v. Cincinnati R., 91 Ky. 526.

(98) Kentucky Central R. v. Thomas, 79 Ky. 160; .... v. Hoehl, 12 Bush 41.

(99) Danner v. South Carolina R., 4 Rich. 329.

(100) Roof v. Railroad Co., 45 S. Car. 61.

(1) Indiana: Boyce v. Fitzpatrick, 80 Ind. 526.

Massachusetts: Avilla v. Nash, 117 Mass. 318; Elmer v. Locke, 135 Mass. 575; Griffin v. Railroad, 148 Mass. 143; Lane v. Atlantic Works, 111 Mass. 136; Clark v. Soule, 137 Mass. 380; Cayzer v. Taylor, 10 Gray 274; Joyce v. City of Worcester, 140 Mass. 245.

New Jersey: Paulmier v. Railroad, 34 N. J. Law 155.

A servant, however, can not wholly ignore a known defect in the instrumentality provided for him, but is required to exercise care and caution in its use. The degree of care depends on the nature of the defect and the character of the use made of the instrumentality. (2) Therefore, if the instrumentality by which he is required to perform this service is so obviously and immediately dangerous that a man of common prudence would refuse to use it, the master cannot be held liable for the resulting damage. In such case the law adjudges the servant guilty of concurrent negligence. (3)

Says the Supreme Court of Missouri: "The question has often been raised, discussed and decided whether a servant can recover for injuries in the use of machinery or appliances known by him to be defective. The non-liability of the master in such cases, however, is properly placed upon the ground of contributory negligence rather than that of assumption of risk. The question is one of contributorynegligence which should be submitted to the jury,unless the defect is so glaringly hazardous that the court should declare, as a matter of law, that a person of ordinary prudence would not use it." (4)

When a servant is ordered into a place of danger by his employer, or is doing something by his master's order not in the ordinary course of his employment, there is no assumption of the risk and the master is responsible for any injury sustained by the servant while acting in obedience to the command of the master unless the danger was so manifest that no prudent man would have entered into it, or the servant was guilty of negligence contributory to his own injury. (5)

10. "The question whether a party has been negligent in a particular case, is one of mingled law and fact. It includes two questions, whether a particular act has been performed or omitted; this is a pure question of fact. Whether the performance or omission of this act was a legal duty; this is a pure question of law. The extent of a person's duties is to be determined by a consideration of the circumstances in which he is placed. The law imposes duties upon men according to the circumstances in which they are called to act. When the facts are disputed, the question of negligence is

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New York: Booth v. Railroad, 73 N. Y. 38; Cone v. Railroad, 15 Hun 172, s. c. 81 N. Y. 206.

Ohio: Pittsburg R. v. Henderson, 37 Ohio St. 549; Harrison v. Railroad, 45 Ohio St. 11.

Wisconsin: Cowan v. Railroad, 80 Wis. 284; Stetler v. Railroad, 46 Wis. 497 and 49 Wis. 609; Atkinson v. Goodrich Trans. Co., 60 Wis. 141; Sherman v. Menominee River Lumber Co., 72 Wis. 122.

United States: Grand Trunk R. v. Cummings, 106 U. S. 700.

(2) Settle v. St. Louis R. Co., 127 Mo. 336, 344.

(3) Patterson v. Railroad, 76 Pa. 389.

(4) Settle v. St. Louis R. 127 Mo. 336.

(5) Lucey v. Hanibal Oil Co., 129 Mo. 32.

a mixed question of law and fact. The jury must ascertain the facts, and the judge must instruct them as to the rule of law which they are to apply to the facts as they may find them. (6)

"When, however, the direct fact in issue is ascertained by undisputed evidence, and such fact is decisive of the case, a question of law is raised, and the court should decide it. The jury has no duty to perform. The issue of negligence comes within this rule. (7) Questions of care and negligence after the facts are proved must be decided by the court." (8)

11. Some states have attempted to establish another rule that merits consideration. It is an attempt to measure or compare the negligence on both sides, and then award judgment in favor of the least culpable. This doctrine has been scouted at in Pennsylvania, but it has been adopted in Illinois and Georgia and is gaining ground. Such a strong principle of justice underlies it that it commends itself to many; on the other hand, an untrained jury is apt to sport with equitable principles in an extraordinary manner. Such a body of men, with strong likes and dislikes, sympathies and prejudices are quite unable often to weigh and compare evidence; in short, often lack adequate legal fitness to administer justice in such cases. Doubtless, if the administration of the rule were confined to a judge, the courts would regard it with more favor.

And here we stop to remark that one of the reasons why the courts have been so industrious in building up a body of law hedging on every side the rights of employes to recover is their fear of the action of juries. Their inclination to give verdicts in favor of employes is proverbial, and also excessive damages. On the other hand, is it not true that the narrowing of their functions leads directly to this result, that whenever they can get a chance they do not fail to improve it? We have no doubt that if the juries had been more impartial the courts would have been more inclined to keep a wider field open for their inquiry.

Let us, then, turn to this rule of measuring the negligence of both parties. In Jacob's case, (9) Justice Breeze, after reviewing many cases, concludes thus: "It will be seen, from the cases, that the question of liability does not depend absolutely on the absence of all negligence on the part of the plaintiff, but upon the relative degree of care or want of care, as manifested by both parties, for all care or negligence is at best but relative, the absence of the highest possible degree of care showing the presence of some negligence, slight as it may be. The true doctrine, therefore, we think, is that in proportion to the negligence of the defendant, should be measured the degree of care required of the plaintiff—that is to say, the more gross the negligence manifested by the defendant, the less degree of care will be required of the plaintiff to enable him to recover."

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(6) Purvis v. Coleman, 1 Bosw. 321.

(7) Dascomb v. Buffalo & State Line R., 27 Barb. 221.

(8) Biles v. Holmes, 11 Ired. (Law) 16; Avera v. Sexton, 11 Ired, 247; Heathcock v. Pennington, 11 Ired. 640; Herring v. Wilmington R., ... Ired (Law) 402.

(9) 20 Ill. 478.

This doctrine, thus announced in Illinois in 1858, has often been re-affirmed by the courts of that state. In a later case, Justice Scott remarked: "Formerly it was the rule, if the negligence of the plaintiff contributed to the injury, however slight, it would bar the action. This rule has been modified by more recent decisions, and it is now the settled law that the plaintiff may recover notwithstanding he may have been guilty of contributory negligence, if his negligence is slight and that of the defendant is gross. It is an essential element to the right of action in all cases, the plaintiff or party injured must himself exercise ordinary care, such as a reasonably prudent man will always adopt for the security of his person or property." (10) And in a still more recent adjudication the cases were elaborately reviewed by Justice Scholfield, and the rule was applied. (11) This rule also prevails in Georgia.

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(10) Chicago R. v. Lee, 68 Ill. 576, 580.

(11) Calumet Iron & Steel Co. v. Martin, 111' Ill. 358.

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